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INTEGRATED INFORMATION SUPPORT SYSTEM (IIS) VOLUME 5

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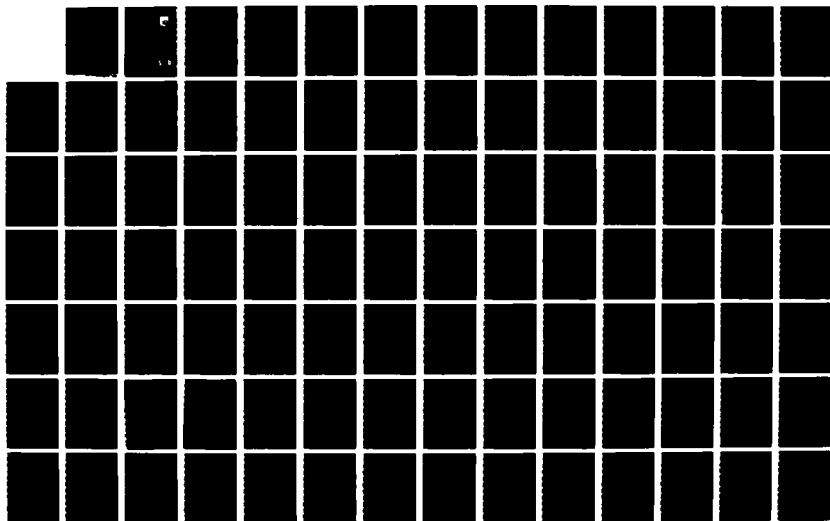
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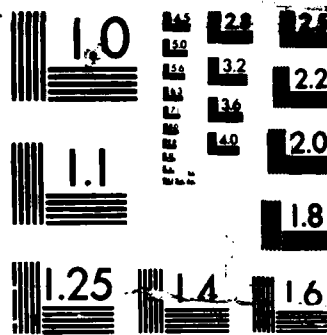
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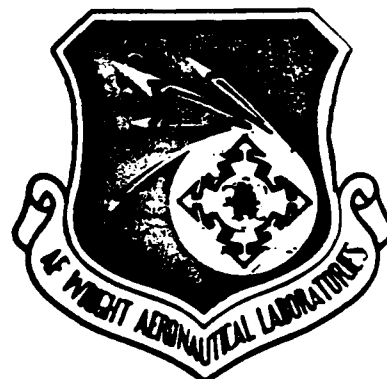




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AFWAL-TR-86-4006
Volume V
Part 29

AD-A182 015



INTEGRATED INFORMATION
SUPPORT SYSTEM (IISS)
Volume V - Common Data Model Subsystem
Part 29 - Data Aggregators Product Specification

General Electric Company
Production Resources Consulting
One River Road
Schenectady, New York 12345

Final Report for Period 22 September 1980 - 31 July 1985
November 1985

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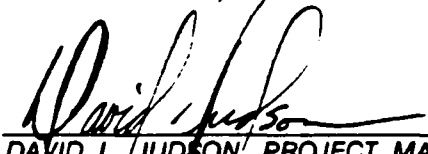
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This technical report has been reviewed and is approved for publication.


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FOR THE COMMANDER:


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<p>This document is the product specification establishing the design implementation of the IISS Configuration Item Data Aggregators which combine the various sub results of distributed data requests by using the relational operations of JOIN, UNION and DIFFERENCE. → 22</p>				
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Vol V - Common Data Model Subsystem
Part 29 - Data Aggregators Product Specification

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PREFACE

This product specification covers the work performed under Air Force Contract F33615-80-C-5155 (ICAM Project 6201). This contract is sponsored by the Materials Laboratory, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Gerald C. Shumaker, ICAM Program Manager, Manufacturing Technology Division, through Project Manager, Mr. David Judson. The Prime Contractor was Production Resources Consulting of the General Electric Company, Schenectady, New York, under the direction of Mr. Alan Rubenstein. The General Electric Project Manager was Mr. Myron Hurlbut of Industrial Automation Systems Department, Albany, New York.

Certain work aimed at improving Test Bed Technology has been performed by other contracts with Project 6201 performing integrating functions. This work consisted of enhancements to Test Bed software and establishment and operation of Test Bed hardware and communications for developers and other users. Documentation relating to the Test Bed from all of these contractors and projects have been integrated under Project 6201 for publication and treatment as an integrated set of documents. The particular contributors to each document are noted on the Report Documentation Page (DD1473). A listing and description of the entire project documentation system and how they are related is contained in document FTR620100001, Project Overview.

The subcontractors and their contributing activities were as follows:

TASK 4.2

Subcontractors

Role

Boeing Military Aircraft
Company (BMAC)

Reviewer.

D. Appleton Company
(DACOM)

Responsible for IDEF support,
state-of-the-art literature
search.

General Dynamics/
Ft. Worth

Responsible for factory view
function and information
models.

<u>Subcontractors</u>	<u>Role</u>
Illinois Institute of Technology	Responsible for factory view function research (IITRI) and information models of small and medium-size business.
North American Rockwell	Reviewer.
Northrop Corporation	Responsible for factory view function and information models.
Pritsker and Associates	Responsible for IDEF2 support.
SofTech	Responsible for IDEFO support.

TASKS 4.3 - 4.9 (TEST BED)

<u>Subcontractors</u>	<u>Role</u>
Boeing Military Aircraft Company (BMAC)	Responsible for consultation on applications of the technology and on IBM computer technology.
Computer Technology Associates (CTA)	Assisted in the areas of communications systems, system design and integration methodology, and design of the Network Transaction Manager.
Control Data Corporation (CDC)	Responsible for the Common Data Model (CDM) implementation and part of the CDM design (shared with DACOM).
D. Appleton Company (DACOM)	Responsible for the overall CDM Subsystem design integration and test plan, as well as part of the design of the CDM (shared with CDC). DACOM also developed the Integration Methodology and did the schema mappings for the Application Subsystems.

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Subcontractors

Role

Digital Equipment
Corporation (DEC)

Consulting and support of the
performance testing and on DEC
software and computer systems
operation.

McDonnell Douglas
Automation Company
(McAuto)

Responsible for the support and
enhancements to the Network
Transaction Manager Subsystem
during 1984/1985 period.

On-Line Software
International (OSI)

Responsible for programming the
Communications Subsystem on the
IBM and for consulting on the
IBM.

Rath and Strong Systems
Products (RSSP) (In 1985
became McCormack & Dodge)

Responsible for assistance in
the implementation and use of
the MRP II package (PIOS) that
they supplied.

SofTech, Inc.

Responsible for the design and
implementation of the Network
Transaction Manager (NTM) in
1981/1984 period.

Software Performance
Engineering (SPE)

Responsible for directing the
work on performance evaluation
and analysis.

Structural Dynamics
Research Corporation
(SDRC)

Responsible for the User
Interface and Virtual Terminal
Interface Subsystems.

Other prime contractors under other projects who have
contributed to Test Bed Technology, their contributing
activities and responsible projects are as follows:

Contractors

ICAM Project

Contributing Activities

Boeing Military
Aircraft Company
(BMAC)

1701, 2201,
2202

Enhancements for IBM
node use. Technology
Transfer to Integrated
Sheet Metal Center
(ISMC).

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<u>Contractors</u>	<u>ICAM Project</u>	<u>Contributing Activities</u>
Control Data Corporation (CDC)	1502, 1701	IISS enhancements to Common Data Model Processor (CDMP).
D. Appleton Company (DACOM)	1502	IISS enhancements to Integration Methodology.
General Electric	1502	Operation of the Test Bed and communications equipment.
Hughes Aircraft Company (HAC)	1701	Test Bed enhancements.
Structural Dynamics Research Corporation (SDRC)	1502, 1701, 1703	IISS enhancements to User Interface/Virtual Terminal Interface (UI/VTI).
Systran	1502	Test Bed enhancements. Operation of Test Bed.

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SECTION 1

SCOPE

1.1 Identification

This specification establishes the design of the *Aggregator Functions*, one of the major functions of the Configuration Item *Common Data Model Processor (CDMP)* to be built and formally accepted by the ICAM Program Office. This CI constitutes one of the subsystems of the Common Data Model Processor (CDM).

1.2 Functional Summary

The purpose of this Computer Program Configuration Item (CPCI) is to aggregate the query output files and produce the result file of the aggregation. *Keyed to: IGO (Integrated Input)*

The following functions are performed by all three aggregators. *Manufacturing*

1. This CPCI receives and unpacks a message from the Network Transaction Manager and builds the appropriate tables that contain the descriptions of the files that are to be aggregated.
2. A sort is performed on both input files based on the key(s) of each file.
3. Individual Aggregator Functions:
 - a. UNION: The Union Aggregator does a sort/merge to combine the two files into the result file. The sort/merge is based on ascending values with a compare between each key in each file. The result file contains the combined input files.
 - b. NOT IN SET: The NIS Aggregator compares the two sorted input files based on the keys and determines if any key value from the first input file is in the second input file. If true, then the record from the first input file is discarded and the compare continues looking for file 1 keys that do not match file 2 keys. The results file contains input file 1 records that do not match.
 - c. JOIN: The Join Aggregator combines two sorted

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input files based on the keys and determines if the key value from the first input file is equal to the keys in second input file. If false, then the record is discarded. If true, the record is used to form the result file.

4. The results of each aggregator are written to a result file described in the initial message.
5. The aggregators send a completion message to the NTM containing the status of the aggregation, the name of the result file and the count of the records in the file.

SECTION 2

DOCUMENTS

2.1 Reference Documents

1. ICAM Documentation Standards: IDS15012000A, 28 December 1981.
2. D. Appleton Co., CDM Administrators Manual; UM620141000, March 1984.
3. D. Appleton Co., CDM1-IDEF1 Model of the Common Data Model; CCS620141000, 15 May 1985.
4. D. Appleton Co., Computer Program Development Specification (DS) for ICAM Integrated Support System (IISS) Configuration Item: NDML Precompiler; DS620141200, 1984.
5. D. Appleton Co., Embedded NDML Programmer's Reference Manual; PRM 620141200, March 1985.
6. Softech, Inc., NTM Programmer's Guide: UM620140001, July 1984.
7. Control Data Corporation, Computer Development Specification (DS) for ICAM Integrated Support System (IISS) Configuration Item: NDDL Command Processor; DS620141100, June 1985.

2.2 Terms and Abbreviations

Attribute Use Class: (AUC)

Conceptual Schema: (CS)

Common Data Model Processor: (CDMP)

Common Data Model: (CDM) Describes common data application process formats, form definitions, etc., of the IISS and includes conceptual schema, external, internal schemas, and schema transformation operators.

Data Field: (DF) An element of data in the external schema. It is by this name that an NDML programmer references

data.

Database Management System: (DBMS)

Distributed Request Supervisor: (DRS) This IISS CDM subsystem configuration item controls the execution of distributed NDML queries and non distributed updates.

Domain: A logical definition of legal attribute class values.

Domain Constraint: Predicate that applies to a single domain.

External Schema: (ES)

Forms: Structured views which may be imposed on windows or other forms. A form is composed of fields where each field is a form, item, or window.

Forms Processor: (FP) A set of callable execution time routines available to an application program for form processing.

Internal Schema: (IS)

Integrated Information Support System: (IISS) A test computing environment used to investigate, demonstrate and test the concepts of information management and information integration in the context of Aerospace Manufacturing. The IISS addresses the problems of integration of data resident on heterogeneous databases supported by heterogeneous computers interconnected via a local Area Network.

Mapping: The correspondence of independent objects in two schemas: ES to CS or CS to IS.

Network Transaction Manager: (NTM) Performs the coordination, communication and housekeeping functions required to integrate the application processes and system services resident on the various hosts into a cohesive system.

Neutral Data Manipulation Language: (NDML) A language developed by the IISS project to provide uniform access to common data, regardless of database manager or distribution criteria. It provides distributed retrieved and single node updates.

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ORACLE: Relational DBMS based on the SQL (Structured Query Language, a product of ORACLE Corp, Menlo Park, CA). The CDM is an ORACLE database.

Parcel: A sequential file containing sections source code of the input application program.

Request Processor: (RP) A COBOL program that will satisfy a retrieval or update NDML subtransaction against a particular Database Management System.

User Interface: (UI) Controls the user's terminal and interfaces with the rest of the system.

Virtual Terminal Interface: (VTI) Performs the interfacing between different terminals and the UI. This is done by defining a specific set of terminal features and protocols which must be supported by UI software which constitutes the Virtual Terminal definition. Specific terminals are then mapped against the Virtual Terminal software by specific software modules written for each type of terminal supported.

SECTION 3
REQUIREMENTS

3.1 Structural Description

The graphic portrayal of this CPCI is included in Section 3.10. This chart shows the hierarchical relationship of each module making up this CPCI.

The Union Aggregator uses the lower level module to handle specific operations. An example of this type of operation is the VAX-11 sort/merge utility to combine two input files.

The Not in Set Aggregator uses the following lower level modules to handle specific operations such as:

1. NOT IN SET sort routine (NISSORT)
2. Opens the input and output NIS files (NISOPEN)
3. Control the comparison of the NIS fields (NISCMD)
4. Reads the NIS file and create character buffer (NISREAD)
5. Write the NIS buffer to results file (NISWRIT)
6. Close, the NIS files (NISCLOS)

The Join Aggregator uses the following lower level modules to handle specific operations such as:

1. Create a relative address file (CDF). (CRTHDR).
2. Create the relative access file for rel. (CRTCDR).
3. Determine in words size of the record (CALCRL).
4. Populate attribute data item (CRTATR).
5. Sorting a file (SORT).
6. Store the sorting criteria for a single attribute (SRTATT).

7. Retrieve the next record from the CDF file (GETREL).
8. Retrieve contents of entity class (GET).
9. Retrieve an attribute from a record (GETFLD).
10. DB AP used to init/change an att value (PUTATT).
11. Write current record (WRTCDR).
12. Update header record (UPDHDR).
13. Write the relative file to join result file (RDRSFL).
14. Close all files used by the aggregators (RDRCLS).

3.2 Functional Flow

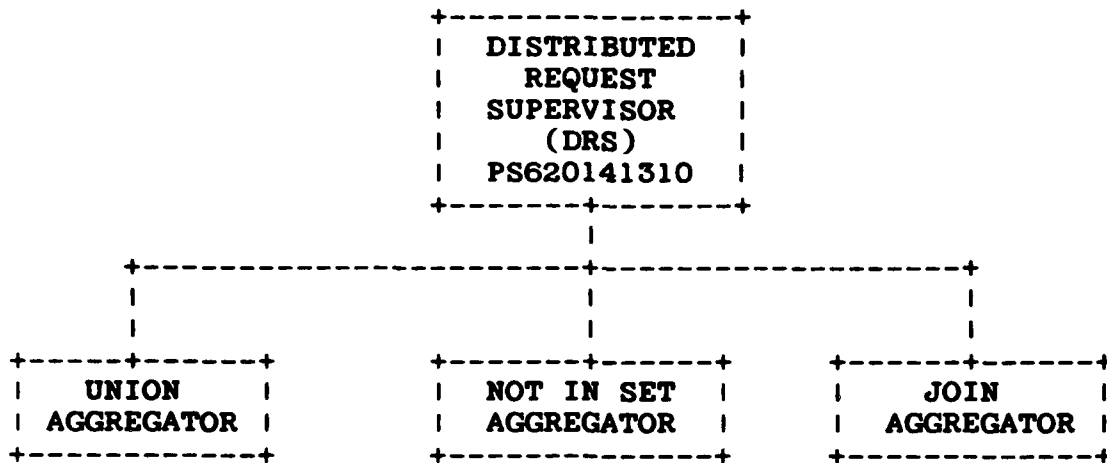
This CPCI implemented the logic defined in the Development Specification for this CPCI. Details of inputs/outputs and relationships between modules are found in Section 3.10.

This CPCI has been designated to operate in a batch or interactive mode. It must operate in the system environment established for IISS; that is, the Network Transaction Manager. It currently can only be executed on the DEC VAX due to the dependence on the VAX sort although this has been identified for change for execution on the IBM.

3.3 Interfaces

The following diagram depicts the interface of the Aggregator and the other CPCI's.

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3.3.1 Inputs/Outputs

The following table shows the inputs and outputs of this CPCI. A detailed description for each item can be found in the DS for this CPCI.

<u>INPUT</u>		<u>OUTPUT</u>
UNION:	Input File Names	Result File Name
	Results File Name	Status
	Attribute Pair List (Keys)	
	Results Field Table (Key Desc)	
NOT IN SET:	Input File Names	Results File Name
	Results File Name	Status
	Attribute Pair List	Number of Records in Result File
	Results Field Table for Each Input File	
	Results Field Table for Results File	

3.4 Program Interrupts

Not applicable to this CPCI.

3.5 Timing and Sequencing Description

This CPCI is activated for each aggregation called for by the distributed request supervisor (DRS).

3.6 Special Control Features

Not applicable to this CPCI.

3.7 Storage Allocation

3.7.1 Database Definition

The database used by this CPCI is the Common Data Model (CDM) database. The model is defined by the CDM1, the IDEF1 model of the CDM, Reference Document Number 3.

3.7.1.1 File Description

No permanent files have been defined for this CPCI. It may

use temporary scratch files for input and output results.

3.7.1.2 Table Description

All tables used by this CPCI have been defined by the Development Specification for this CPCI.

3.7.1.3 Item Description

Not applicable to this CPCI.

3.8 Object Code Creation

The object code for this CPCI will be created by the system integration team using defined IISS Software Configuration Management procedures. This CPCI will use the COBOL and FORTRAN language compilers.

3.9 Adaptation Data

This CPCI has been using ANSI COBOL and FORTRAN languages. The intent was to provide a transportable system. Any system environment supporting these languages, a virtual memory management schema, the COMM and NTM subsystems of IISS and the ORACLE Database Management System should be able to localize and identify any machine or environment dependent modules through the original design of the IISS and application of Configuration Management Procedures.

3.10 Detail Design Description

The following sections have been computer generated for this CPCI.

3.10.1 Main Program List

The following is a list of all "Main Programs" which are modules that are not called by any other module being documented here. These modules are either program entry points or, if they are hooked into another set of programs via subroutine calls, they are the points the external programs can call and therefore enter through. To differentiate between the two types of entry points, look at the individual Module Documentation (section 3.10.8) and look at Module Type for each of the Main Program modules listed. Note whether the routine is a Program, Subroutine, or Function. If it is a Program, it

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is truly a main program entry point. If not, then it is merely called by other programs not being documented here.

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DATA AGGREGATORS Main Program List

Module Name -----	Purpose -----
ANAATT	DETERMINE LEGALITY OF ATTRIBUTE NAME
ANABOO	VERIFY A BOOLEAN CONDITION
ANAREL	DETERMINE VALIDTY OF RELATIONAL OPERATOR
ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
CDJO1	AGGREGATOR JOIN FUNCTION
CDNO1	AGGREGATOR NOT IN SET FUNCTION
CDOU1	AGGREGATOR UNION FUNCTION
CONCAT	CONCATENATE TWO STRINGS
HOLCHR	CONVERT DATA FROM HOLLERITH TO CHARACTER
RDCDFR	**** PURPOSE NOT FOUND BY STRIPPER ****
RELFTN	CONVERT REAL NUMBER TO CHARACTER STRING

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3.10.2 Module List

The following is a list of all the modules being documented here along with their purpose. Each module has a unique name, no matter what language it was written in.

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DATA AGGREGATORS Module List

Module Name -----	Purpose -----
ACTLEN	DETERMINE LENGTH OF CHARACTER STRING
ADDCHN	ADD ATTRIBUTE TO LINKED LIST
ANAATT	DETERMINE LEGALITY OF ATTRIBUTE NAME
ANABOO	VERIFY A BOOLEAN CONDITION
ANAREL	DETERMINE VALIDTY OF RELATIONAL OPERATOR
ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
CALCRL	DETERMINE IN WORDS ,SIZE OF THE RECORD
CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION
CHGPTR	ADJUST COMMON DATA RECORD POINTER
CHKRNG	PERFORM ATTRIBUTE VALUE RANGE CHECKS
CHREAL	CHARACTER TO REAL CONVERSIONS
CHRHOL	CONVERT CHAR STRING TO INTEGER ARRAY
CHRINT	CHARACTER TO INTEGER CONVERSION

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DATA AGGREGATORS Module List

Module Name -----	Purpose -----
CONCAT	CONCATENATE TWO STRINGS
CONDIG	CONVERTS SIGN OF SIGNED VALUE TO DIGIT VAL
CRTATR	POPULATE ATTRIBUTE DATA ITEMS
CRTBUF	CREATE CHAR. STRING FOR FIELD COMPARISON
CRTCDR	CREATE THE RELATIVE ACCESS FILE FOR REL.
CRTHDR	CREATE A RELATIVE ADDRESS FILE (CDF)
FORCLS	CLOSE ALL FILES USED BY THE AGGREGATORS
GACHK	CHECK INPUT PARAMETERS OF 'GETATT' CALL
GAINFO	STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
GET	RETRIEVE CONTENTS OF ENTITY CLASS
GETATT	RETRIEVE ATTRIBUTE INFORMATION
GETCHK	CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS
GETFLD	RETRIEVE AN ATTRIBUTE FROM A RECORD
GETITM	EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER

DATA AGGREGATORS Module List

Module Name -----	Purpose -----
GETPTR	DETERMINE NEXT CURRENT RECORD POINTER
GETREL	RETRIEVE THE NEXT RECORD FROM THE CDF FILE
HOLCHR	CONVERT DATA FROM HOLLERITH TO CHARACTER
INTCHR	CONVERT INTEGER VALUE TO CHARACTER STRING
INTSRT	FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
NISCLOS	THIS PROCESS CLOSES THE NIS FILES
NISCMD	CONTROL THE COMPARISON OF THE NIS FIELDS
NISINT	CONVERTS A STRING NUMBER TO AN INTERGER
NISOPEN	OPENS THE INPUT AND OUTPUT NIS FILES
NISREAD	READS THE NIS FILE AND CREATE CHAR BUFFER
NISREL	CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**
NISSORT	NOT-IN-SET SORT ROUTINE
NISWRIT	TO WRITE THE NIS BUFFER TO RESULTS FILE
PACHK	CHECK THE PARAMETERS OF THE PUTATT CALL

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DATA AGGREGATORS Module List

Module Name -----	Purpose -----
PUTATT	DB AP USED TO INIT/CHANGE AN ATT VALUE
PUTITM	CONVERTS VAL SUPPLIED AND STORES IN BUFFER
RDCDFR	**** PURPOSE NOT FOUND BY STRIPPER ****
RDCDR	RETURN THE CONTENTS OF A COMMON DATA RECORD**
RDHDR	READ HEADER RECORD TO DETERMINE PROCESSING
RDRSFL	WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
REALCH	CONVERT REAL NUMBER TO CHARACTER STRING
RELFTN	CONVERT REAL NUMBER TO CHARACTER STRING
RETCDR	SORTING AND WRITE RECORD
SACHK	SORTING THE ATTRIBUTE RECORDS
SORT	SORTING A FILE
SRTATT	STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **
SRTCDR	SORTING THE COMMON DATA RECORD
TRMSRT	TERMINATE THE SORTING

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DATA AGGREGATORS Module List

Module Name -----	Purpose -----
UPDHDR	UPDATE HEADER RECORD
WRTATT	WRITE ATTRIBUTE RECORD
WRTCDR	WRITE CURRENT RECORD
WRTHDR	WRITE RECORD HEADER
WRTREL	WRITE A RECORD TO THE RESULT FILE

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3.10.3 External Routines List

The following is a list of all routines or functions not documented here that are called by modules that are documented here. The first caller, in alphabetical order, is listed as well. The specification in which any module is documented may be found in the Module Documentation Index (Document Number CM 620100001). See section 3.10.6 for a list of the modules that call each of these external routines.

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DATA AGGREGATORS External Routines List

Module Name	First User
-----	-----
BLANKH	ANAVAL
DELFIL	CDJ01
ERRPRO	CDU01
FOR\$CLOSE	RDRSFL
FOR\$INQUIRE	SORT
FOR\$OPEN	NISOPEN
GENFIL	CDN01
INITAL	CDU01
LIB\$INDEX	GETPTR
NSEND	CDN01
RCV	CDJ01
RMATR	ANAVAL
SIGERR	CDU01
SOR\$END SORT	CDU01
SOR\$INIT SORT	CDU01
SOR\$PASS FILES	CDU01
SOR\$RELEASE REC	SRTCDCR
SOR\$RETURN REC	RETCDCR
SOR\$SORT MERGE	NISSORT
STRMOV	CDJ01
TOKEN	ANAREL
TRMNAT	CDJ01
WTHST	CDU01

3.10.4 Include File List

The following is a list of all include files called in by modules being documented here. Each include file has a unique name regardless of the language being used. The purpose of each include file is listed as well. A more complete description of each include file is given in section 3.10.9. The purpose listed is the one that is in the source code of the include file.

A purpose of "***** PURPOSE NOT FOUND BY STRIPPER *****" indicates that a purpose statement was not written into the include file itself. The most common reason for this is that the include file comes from system libraries that were not developed by the project, such as 'C' libraries that are provided with the 'C' compiler.

See section 3.10.6 for a set of lists which show all the modules which call in each of these include files.

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DATA AGGREGATORS Include File List

File Name	Purpose
-----	-----
AGGMSG	AGGREGATOR INPUT MESSAGE
APL	JOIN QUERY ATTRIBUTE PAIR LIST
ATTRINF.INF	**** PURPOSE NOT FOUND BY STRIPPER ****
CHKCDM	IISS CDMP CHECK STATUS CODES
ERRCDM	IISS ERROR STATUS CODES FOR CDMP MODULES
ERRPRO	PROCESS ERROR INCLUDE FILE
HDRINFO.INF	**** PURPOSE NOT FOUND BY STRIPPER ****
JQGTBL	JOIN QUERY GRAPH TELLS HOW TO CONNECT SUBTRANSACTIONS
MACHDEP.INF	**** PURPOSE NOT FOUND BY STRIPPER ****
RFTAB2	THE RESULT FIELD TABLE
RFTABLE	THE RESULT FIELD TABLE
SRVRET	AS THE RETURN GIVEN A TABLE-FULL ERROR
STDRESP	WS DEFINITION FOR STANDARD STATUS VARIABLE

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3.10.5 Where Include File Used List

The following lists each include file from 3.10.4 and all the modules documented in this specification which include them. The purpose of each module is listed as well.

DATA AGGREGATORS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
--------------------------	-------------------------	----------------------------

AGGMSG

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION

APL

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION

ATTRINF.INF

ADDCHN	ADD ATTRIBUTE TO LINKED LIST
ANAATT	DETERMINE LEGALITY OF ATTRIBUTE NAME
CRTATR	POPULATE ATTRIBUTE DATA ITEMS
GACHK	CHECK INPUT PARAMETERS OF 'GETATT' CALL
GAINFO	STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
GETATT	RETRIEVE ATTRIBUTE INFORMATION
INTSRT	FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
PACHK	CHECK THE PARAMETERS OF THE PUTATT CALL
PUTATT	DB AP USED TO INIT/CHANGE AN ATT VALUE
SACHK	SORTING THE ATTRIBUTE RECORDS
WRTATT	WRITE ATTRIBUTE RECORD

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DATA AGGREGATORS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
--------------------------	-------------------------	----------------------------

CHKCDM

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION

ERRCDM

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION
NISSORT	NOT-IN-SET SORT ROUTINE

ERRPRO

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION
NISSORT	NOT-IN-SET SORT ROUTINE

HDRINFO.INF

ADDCHN	ADD ATTRIBUTE TO LINKED LIST
ANAATT	DETERMINE LEGALITY OF ATTRIBUTE NAME
CHGPTR	ADJUST COMMON DATA RECORD POINTER
CRTCDR	CREATE THE RELATIVE ACCESS FILE FOR REL.

DATA AGGREGATORS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CRTHDR	CREATE A RELATIVE ADDRESS FILE (CDF)
	GET	RETRIEVE CONTENTS OF ENTITY CLASS
	GETATT	RETRIEVE ATTRIBUTE INFORMATION
	GETCHK	CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS
	INTSRT	FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
	PUTATT	DB AP USED TO INIT/CHANGE AN ATT VALUE
	RDCDFR	**** PURPOSE NOT FOUND BY STRIPPER ****
	RDHDR	READ HEADER RECORD TO DETERMINE PROCESSING
	RDRSFL	WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
	RETCDR	SORTING AND WRITE RECORD
	SACHK	SORTING THE ATTRIBUTE RECORDS
	SORT	SORTING A FILE
	SRTATT	STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **
	TRMSRT	TERMINATE THE SORTING
	UPDHDR	UPDATE HEADER RECORD
	WRTHDR	WRITE RECORD HEADER

JQGTBL

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION

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DATA AGGREGATORS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
--------------------------	-------------------------	----------------------------

MACHDEP.INF

CALCRL	DETERMINE IN WORDS ,SIZE OF THE RECORD
CHRHOL	CONVERT CHAR STRING TO INTEGER ARRAY
HOLCHR	CONVERT DATA FROM HOLLERITH TO CHARACTER

RFTAB2

CDN01	AGGREGATOR NOT IN SET FUNCTION
-------	--------------------------------

RFTABLE

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION

SRVRET

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION
CDU01	AGGREGATOR UNION FUNCTION

STDRESP

CDJ01	AGGREGATOR JOIN FUNCTION
CDN01	AGGREGATOR NOT IN SET FUNCTION

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DATA AGGREGATORS Where-include-file-used List

Include File -----	Module Name -----	Module Purpose -----
	CDU01	AGGREGATOR UNION FUNCTION

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3.10.6 Where External Routine Used List

The following lists each external function or routine listed in 3.10.3 and all the documented modules which call it. The purpose of each module is listed as well.

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DATA AGGREGATORS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
BLANKH	ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
DELFIL	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
ERRPRO	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
	NISSORT	NOT-IN-SET SORT ROUTINE
FOR\$CLOSE	CRTCDR	CREATE THE RELATIVE ACCESS FILE FOR REL.
	FORCLS	CLOSE ALL FILES USED BY THE AGGREGATORS
	NISCLOS	THIS PROCESS CLOSES THE NIS FILES
	RDCDFR	**** PURPOSE NOT FOUND BY STRIPPER ****
	RDRSFL	WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
FOR\$INQUIRE	GET	RETRIEVE CONTENTS OF ENTITY CLASS
	GETATT	RETRIEVE ATTRIBUTE INFORMATION
	PUTATT	DB AP USED TO INIT/CHANGE AN ATT VALUE

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DATA AGGREGATORS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	SORT	SORTING A FILE
	SRTATT	STORE THE SORTING CRITERIA FOR A SINGLE ATTRIBUTE **
FOR\$OPEN	CRTCDR	CREATE THE RELATIVE ACCESS FILE FOR REL.
	CRTHDR	CREATE A RELATIVE ADDRESS FILE (CDF)
	NISOPEN	OPENS THE INPUT AND OUTPUT NIS FILES
	RDCDFR	**** PURPOSE NOT FOUND BY STRIPPER ****
	RDRSFL	WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
GENFIL	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
INITAL	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
LIB\$INDEX	ANABOO	VERIFY A BOOLEAN CONDITION
	^NAREL	DETERMINE VALIDTY OF RELATIONAL OPERATOR

DATA AGGREGATORS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
	CHGPTR	ADJUST COMMON DATA RECORD POINTER
	CHKRNG	PERFORM ATTRIBUTE VALUE RANGE CHECKS
	CHREAL	CHARACTER TO REAL CONVERSIONS
	GETCHK	CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS
	GETPTR	DETERMINE NEXT CURRENT RECORD POINTER
NSEND		
	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
RCV		
	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
RMATR		
	ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
SIGERR		
	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION

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DATA AGGREGATORS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
SOR\$END_SORT		
	CDU01	AGGREGATOR UNION FUNCTION
	NISSORT	NOT-IN-SET SORT ROUTINE
	TRMSRT	TERMINATE THE SORTING
SOR\$INIT_SORT		
	CDU01	AGGREGATOR UNION FUNCTION
	INTSRT	FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
	NISSORT	NOT-IN-SET SORT ROUTINE
SOR\$PASS_FILES		
	CDU01	AGGREGATOR UNION FUNCTION
	NISSORT	NOT-IN-SET SORT ROUTINE
SOR\$RELEASE_REC		
	SRTCDR	SORTING THE COMMON DATA RECORD
SOR\$RETURN_REC		
	RETCDR	SORTING AND WRITE RECORD
SOR\$SORT_MERGE		
	CDU01	AGGREGATOR UNION FUNCTION
	NISSORT	NOT-IN-SET SORT ROUTINE

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DATA AGGREGATORS Where-external-routine-used List

System Module -----	Module Name -----	Module Purpose -----
	SRTCDR	SORTING THE COMMON DATA RECORD
STRMOV	CDJ01	AGGREGATOR JOIN FUNCTION
TOKEN	ANAATT	DETERMINE LEGALITY OF ATTRIBUTE NAME
	ANABOO	VERIFY A BOOLEAN CONDITION
	ANAREL	DETERMINE VALIDTY OF RELATIONAL OPERATOR
	ANAVAL	CONVERT VALUE OF ATTRIBUTE TYPE
TRMNAT	CDJ01	AGGREGATOR JOIN FUNCTION
	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION
WHTHST	CDN01	AGGREGATOR NOT IN SET FUNCTION
	CDU01	AGGREGATOR UNION FUNCTION

3.10.7 Main Program Parts List

The following lists each Main Program listed in 3.10.1 and all the modules which are called either by that module itself or by any of the documented modules which it calls. It is possible for a non-main module to be listed more than once if it is called by multiple modules. The called modules, in this case known as program parts, are marked as to whether they are documented here. If so, the phrase "well-defined module" appears by the module name, if not it is an "external routine". The Purpose of the Main Program module is listed as well.

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
ANAATT		Purpose--> DETERMINE LEGALITY OF ATTRIBUTE NAME **
	GAINFO	Well-defined module
	TOKEN	External routine

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
ANABOO		Purpose-->VERIFY A BOOLEAN CONDITION
	LIB\$INDEX	External routine
	TOKEN	External routine

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
ANAREL		Purpose--> DETERMINE VALIDTY OF RELATIONAL OPERATOR **
	LIB\$INDEX	External routine
	TOKEN	External routine

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
ANAVAL		Purpose---, CONVERT VALUE OF ATTRIBUTE TYPE
	BLANKH	External routine
	CHREAL	Well-defined module
	CHRHOL	Well-defined module
	CHRINT	Well-defined module
	GAINFO	Well-defined module
	LIB\$INDEX	External routine
	RMATR	External routine
	TOKEN	External routine

DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
CDJ01	Purpose-->	AGGREGATOR JOIN FUNCTION
	ACTLEN	Well-defined module
	ADDCHN	Well-defined module
	CALCRL	Well-defined module
	CHGPTR	Well-defined module
	CHKRNG	Well-defined module
	CHREAL	Well-defined module
	CHRINT	Well-defined module
	CRTATR	Well-defined module
	CRTCDD	Well-defined module
	CRTHDR	Well-defined module
	DELFIL	External routine
	ERRPRO	External routine
	FOR\$CLOSE	External routine
	FOR\$INQUIRE	External routine
	FOR\$OPEN	External routine
	FORCLS	Well-defined module
	GACHK	Well-defined module
	GAINFO	Well-defined module
	GENFIL	External routine
	GET	Well-defined module
	GETATT	Well-defined module
	GETCHK	Well-defined module
	GETFLD	Well-defined module
	GETITM	Well-defined module
	GETPTR	Well-defined module
	GETREL	Well-defined module
	INITAL	External routine
	INTCHR	Well-defined module
	INTSRT	Well-defined module
	LIB\$INDEX	External routine
	NSEND	External routine
	PACHK	Well-defined module
	PUTATT	Well-defined module
	PUTITM	Well-defined module
	RCV	External routine
	RDCDD	Well-defined module
	RDHDD	Well-defined module
	RDRSFL	Well-defined module
	REALCH	Well-defined module

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
	RETCDR	Well-defined module
	SACHK	Well-defined module
	SIGERR	External routine
	SOR\$END_SORT	External routine
	SOR\$INIT_SORT	External routine
	SOR\$RELEASE_REC	External routine
	SOR\$RETURN_REC	External routine
	SOR\$SORT_MERGE	External routine
	SORT	Well-defined module
	SRTATT	Well-defined module
	SRTCDCR	Well-defined module
	STRMOV	External routine
	TRMNAT	External routine
	TRMSRT	Well-defined module
	UPDHDR	Well-defined module
	WRTATT	Well-defined module
	WRTCDCR	Well-defined module
	WRTHDR	Well-defined module
	WRTREL	Well-defined module

DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
CDN01	Purpose-->	AGGREGATOR NOT IN SET FUNCTION
	CONDIG	Well-defined module
	CRTBUF	Well-defined module
	DELFIL	External routine
	ERRPRO	External routine
	FOR\$CLOSE	External routine
	FOR\$OPEN	External routine
	GENFIL	External routine
	INITAL	External routine
	NISCLOS	Well-defined module
	NISCMD	Well-defined module
	NISINT	Well-defined module
	NISOPEN	Well-defined module
	NISREAD	Well-defined module
	NISREL	Well-defined module
	NISSORT	Well-defined module
	NISWRIT	Well-defined module
	NEEND	External routine
	RCV	External routine
	SIGERR	External routine
	SOR\$END_SORT	External routine
	SOR\$INIT_SORT	External routine
	SOR\$PASS_FILES	External routine
	SOR\$SORT_MERGE	External routine
	TRMNAT	External routine
	WHTHST	External routine

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
CDU01	Purpose-->	AGGREGATOR UNION FUNCTION
	ERRPRO	External routine
	GENFIL	External routine
	INITAL	External routine
	NSEND	External routine
	RCV	External routine
	SIGERR	External routine
	SOR\$END_SORT	External routine
	SOR\$INIT_SORT	External routine
	SOR\$PASS_FILES	External routine
	SOR\$SORT_MERGE	External routine
	TRMNAT	External routine
	WTHST	External routine

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
CONCAT	ACTLEN	Purpose--> CONCATENATE TWO STRINGS Well-defined module

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DATA AGGREGATORS Main Program Parts List

Main Pgm Name -----	Module Name -----	Module Type -----
RDCDFR		Purpose--> **** PURPOSE NOT FOUND BY STRIPPER ****
	FOR\$CLOSE	External routine
	FOR\$OPEN	External routine
	RDCDR	Well-defined module
	RDHDR	Well-defined module
	WRTREL	Well-defined module

3.10.8 Module Documentation

The following documentation describes information which is specific to each individual module being documented in this specification as listed in section 3.10.2. It provides a compact way of getting information that would be otherwise buried within each module's source code.

The specific items in this module documentation have the following meanings:

NAME:	Name of program Module.
PURPOSE:	Purpose of Module as detailed in the source code.
LANGUAGE:	Programming language source code is written in. The choices are: VAX-11 FORTRAN C (I/S-1 Workbench 'C') VAX-11 COBOL
MODULE TYPE:	Whether a Program, Subroutine, or Function.
SOURCE FILE:	Name of Source File from file specification.
SOURCE FILE TYPE:	Source File Extension from file specification.
HOST:	Whether this is a host-dependent routine (VAX or IBM) or blank if host-independent.
SUBSYSTEM:	IISS sub-system this file resides in.
SUBDIRECTORY:	Sub-directory of that subsystem in which this file resides.
DOCUMENTATION GROUP:	Name of documentation group of which this source file is a member.
DESCRIPTION:	A description of the module as obtained

from the source code.

ARGUMENTS: The arguments with which this routine is called if it is a Subroutine or a Function.

INCLUDE FILES: A list of all the files that are included into this module as well as their purposes.

ROUTINES CALLED: Subroutines or Functions, either documented or external, called by this module, if any.

CALLED DIRECTLY BY: The documented routines which call this module, if any.

USED IN MAIN PROGRAM(S): The documented Main Programs which contain this module in their parts list according to the list in section 3.10.7.

The Module Documentation is arranged alphabetically according to Module Name.

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DATA AGGREGATORS Module Documentation

NAME: ACTLEN
PURPOSE: DETERMINE LENGTH OF CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ACTLEN
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

THIS PRIMITIVE WILL BE
USED TO DETERMINE THE
LENGTH OF THE CHARACTER
STRING PASSED TO IT

ARGUMENTS:

STRING = CHAR
LENGTH = I*4

CALLED DIRECTLY BY:

CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS **
CONCAT - CONCATENATE TWO STRINGS **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
CONCAT - CONCATENATE TWO STRINGS **

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DATA AGGREGATORS Module Documentation

NAME: ADDCHN
PURPOSE: ADD ATTRIBUTE TO LINKED LIST
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ADDCHN
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ATRADR = I*4
CDFLU = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT
IHD
CHD

ROUTINES CALLED:

WRTATT - WRITE ATTRIBUTE RECORD
WRTHDR - WRITE RECORD HEADER

**
**

CALLED DIRECTLY BY:

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SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE
 ATTRIBUTE

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: ANAATT
PURPOSE: DETERMINE LEGALITY OF ATTRIBUTE NAME
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = I*4
START = I*4
CDFLU = I*4
RC = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT
IHD
CHD

ROUTINES CALLED:

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
TOKEN

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DATA AGGREGATORS Module Documentation

NAME: ANABOO
PURPOSE: VERIFY A BOOLEAN CONDITION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANABOO
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = CHAR
START = I*4
END = L*4
BOOL = CHAR
RC = I*4

ROUTINES CALLED:

LIB\$INDEX
TOKEN

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DATA AGGREGATORS Module Documentation

NAME: ANAREL
PURPOSE: DETERMINE VALIDTY OF RELATIONAL OPERATOR
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAREL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = CHAR
START = I*4
RELOP = CHAR
RC = I*4

ROUTINES CALLED:

LIB\$INDEX
TOKEN

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DATA AGGREGATORS Module Documentation

NAME: ANAVAL
PURPOSE: CONVERT VALUE OF ATTRIBUTE TYPE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: ANAVAL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SC = CHAR
START = I*4
VALUES = I*4 (1)
REALVAL = R*4 (1)
RC = I*4
CDFLU = I*4
ATTFLG = L*4

ROUTINES CALLED:

BLANKH
CHREAL - CHARACTER TO REAL CONVERSIONS **
CHRHOL - CONVERT CHAR STRING TO INTEGER ARRAY **
CHRINT - CHARACTER TO INTEGER CONVERSION **
GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
LIB\$INDEX
RMATR
TOKEN

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DATA AGGREGATORS Module Documentation

NAME: CALCRL
PURPOSE: DETERMINE IN WORDS ,SIZE OF THE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CALCRL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RECL = I*4
RECSIZ = I*4

INCLUDE FILES:

MACHDEP.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:
BNFMDP

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

DATA AGGREGATORS Module Documentation

NAME: CDJ01
PURPOSE: AGGREGATOR JOIN FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDJ01
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

-
THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO PERFORM RELATION JOINS UPON INTERMEDIATE RESULTS OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH THE STAGER/SCHEDULER CI AND QUERY PROCESSORS, PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED TO THEM BY APPLICATION PROCESSES.

-
THE JOIN AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM AND BUILDS APPROPRIATE TABLES AND FILES FOR THE TWO OPERAND RELATION AND RESULTANT RELATION.
2. IT SORTS THE OPERANDS WHICH ARE STORED IN FILES FOR THE JOIN.
3. IT READS THE OPERAND FILES, PERFORMS THE JOIN AND CREATES THE FILE WHICH WILL CONTAIN THE RESULTANT RELATION.
4. IT SENDS A COMPLETION MESSAGE TO THE STAGER/SCHEDULER WHICH CONTAINS PROGRAM STATUS AND THE NUMBER OF RECORDS IN THE RESULTANT RELATION.

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMF MODULES
CHKCDM - IISS CDMF CHECK STATUS CODES
APL - JOIN QUERY ATTRIBUTE PAIR LIST
JQGTBL - JOIN QUERY GRAPH TELLS HOW TO CONNECT
SUBTRANSACTIONS
RFTABLE - THE RESULT FIELD TABLE
AGGMSG - AGGREGATOR INPUT MESSAGE
STDRESP - WS DEFINITION FOR STANDARD STATUS VARIABLE
SRVRET - AS THE RETURN GIVEN A TABLE-FULL ERROR
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

GENFIL
INITAL
RCV
SIGERR
CRTHDR - CREATE A RELATIVE ADDRESS FILE (CDF) **
CRTCDR - CREATE THE RELATIVE ACCESS FILE FOR REL. **
CALCRL - DETERMINE IN WORDS ,SIZE OF THE RECORD **
CRTATR - POPULATE ATTRIBUTE DATA ITEMS **
SORT - SORTING A FILE **
SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE
ATTRIBUTE
GETREL - RETRIEVE THE NEXT RECORD FROM THE CDF FILE **
GET - RETRIEVE CONTENTS OF ENTITY CLASS **
GETFLD - RETRIEVE AN ATTRIBUTE FROM A RECORD **
STRMOV
PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **
WRTCDR - WRITE CURRENT RECORD **
UPDHDR - UPDATE HEADER RECORD **
RDRSFL - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
FORCLS - CLOSE ALL FILES USED BY THE AGGREGATORS **
NSEND
DELFIL
TRMNAT
ERRPRO

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DATA AGGREGATORS Module Documentation

NAME: CDN01
PURPOSE: AGGREGATOR NOT IN SET FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDN01
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

-

THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO PERFORM RELATION NOT IN SETS UPON INTERMEDIATE RESULTS OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH THE DISTRIBUTED REQUEST SUPERVISOR CI AND REQUEST PROCESSORS, PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED TO THEM BY APPLICATION PROCESSES.

I B M N O T E

VAX SPECIFIC ITEMS WILL BE MARKED WITH AN IBM COMMENT TO DENOTE CHANGES THAT MUST BE MADE TO HOST THIS MODULE TO THE IBM

-

THE NOT IN SET AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM AND BUILDS APPROPRIATE TABLES FOR THE TWO OPERAND RELATION AND RESULTANT RELATION.
2. IT PERFORMS A SORT/COMPARE OPERATION ON THE OPERAND RELATION CREATING THE RESULTANT RELATION.
3. IT SENDS A COMPLETION MESSAGE TO THE DISTRIBUTED REQUEST SUPERVISOR WHICH CONTAINS PROGRAM STATUS AND THE NUMBER OF RECORDS IN THE RESULTANT RELATION.

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INCLUDE FILES:

RFTABLE - THE RESULT FIELD TABLE
RFTAB2 - THE RESULT FIELD TABLE
APL - JOIN QUERY ATTRIBUTE PAIR LIST
JQGTBL - JOIN QUERY GRAPH TELLS HOW TO CONNECT
SUBTRANSACTIONS
AGGMSG - AGGREGATOR INPUT MESSAGE
STDRESP - WS DEFINITION FOR STANDARD STATUS VARIABLE
CHKCDM - IISS CDM CHECK STATUS CODES
ERRCDM - IISS ERROR STATUS CODES FOR CDM MODULES
SRVRET - AS THE RETURN GIVEN A TABLE-FULL ERROR
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

INITAL
RCV
SIGERR
WTHST
GENFIL
NISSORT - NOT-IN-SET SORT ROUTINE
NISOPEN - OPENS THE INPUT AND OUTPUT NIS FILES **
NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS **
NISREAD - READS THE NIS FILE AND CREATE CHAR BUFFER **
NISWRIT - TO WRITE THE NIS BUFFER TO RESULTS FILE **
NISCLOS - THIS PROCESS CLOSES THE NIS FILES **
NSEND
DELFIL
TRMNAT
ERRPRO

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CDU01
PURPOSE: AGGREGATOR UNION FUNCTION
LANGUAGE: VAX-11 COBOL
MODULE TYPE: PROGRAM
SOURCE FILE: CDU01
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

-
THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO PERFORM RELATION UNIONS UPON INTERMEDIATE RESULTS OF A MULTI-DATABASE TRANSACTION. IT, ALONG WITH THE STAGER/SCHEDULER CI AND QUERY PROCESSORS, PERFORM THE RUN TIME EVALUATION OF COMMANDS PRESENTED TO THEM BY APPLICATION PROCESSES.

THE UNION AGGREGATOR PERFORMS THE FOLLOWING:

1. IT RECEIVES AND UNPACKS A MESSAGE FROM THE NTM AND BUILDS APPROPRIATE TABLES FOR THE TWO OPERAND RELATION AND RESULTANT RELATION.
2. IT PERFORMS A SORT/MERGE OPERATION ON THE OPERAND RELATION CREATING THE RESULTANT RELATION.
3. IT SENDS A COMPLETION MESSAGE TO THE DISTRIBUTED REQUEST SUPERVISOR WHICH CONTAINS PROGRAM STATUS, THE RESULT FILE NAME, AND A RECORD COUNT OF 1. THE DRS WILL COUNT THE NUMBER OF RECORDS BASED ON THE NUMBER OF RECORDS IN EACH INPUT FILE.

INCLUDE FILES:

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RFTABLE	- THE RESULT FIELD TABLE
AGGMSG	- AGGREGATOR INPUT MESSAGE
STDRESP	- WS DEFINITION FOR STANDARD STATUS VARIABLE
ERRCDM	- IISS ERROR STATUS CODES FOR CDM MODULES
CHKCDM	- IISS CDM CHECK STATUS CODES
SRVRET	- AS THE RETURN GIVEN A TABLE-FULL ERROR
ERRPRO	- PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

INITAL
RCV
SIGERR
WTHST
GENFIL
SOR\$PASS_FILES
SOR\$INIT_SORT
SOR\$SORT_MERGE
SOR\$END_SORT
NSEND
TRMNAT
ERRPRO

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CHGPTR
PURPOSE: ADJUST COMMON DATA RECORD POINTER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHGPTR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

POSPAR = CHAR
NEXTREC = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

LIB\$INDEX

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

**

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USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: CHKRNG
PURPOSE: PERFORM ATTRIBUTE VALUE RANGE CHECKS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHKRNG
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CHADR = CHAR
IADRES = I*4
RADRES = R*4
CONST = CHAR
HIVAL = CHAR
LOVAL = CHAR
LGTH = I*4
DTYPE = CHAR
RC = I*4

ROUTINES CALLED:

ACTLEN - DETERMINE LENGTH OF CHARACTER STRING **
CHREAL - CHARACTER TO REAL CONVERSIONS **
CHRINT - CHARACTER TO INTEGER CONVERSION **
LIB\$INDEX

CALLED DIRECTLY BY:

PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **

USED IN MAIN PROGRAM(S):

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1 November 1985

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CHREAL
PURPOSE: CHARACTER TO REAL CONVERSIONS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHREAL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
REALVA = R*4
RC = I*4

ROUTINES CALLED:

LIB\$INDEX

CALLED DIRECTLY BY:

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS **
GETITH - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER **

USED IN MAIN PROGRAM(S):

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
CDJO1 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: CHRHOL
PURPOSE: CONVERT CHAR STRING TO INTEGER ARRAY
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHRHOL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
INTADD = I*4 (1)
RC = I*4

INCLUDE FILES:

MACHDEP.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

BNFMDP

CALLED DIRECTLY BY:

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **

USED IN MAIN PROGRAM(S):

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CHRINT
PURPOSE: CHARACTER TO INTEGER CONVERSION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CHRINT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
INTGR = I*4
RC = I*4

CALLED DIRECTLY BY:

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
CHKRNG - PERFORM ATTRIBUTE VALUE RANGE CHECKS **
GETITH - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER **

USED IN MAIN PROGRAM(S):

ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
CDJO1 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CONCAT
PURPOSE: CONCATENATE TWO STRINGS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CONCAT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
ADDSTR = CHAR

ROUTINES CALLED:

ACTLEN - DETERMINE LENGTH OF CHARACTER STRING

**

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DATA AGGREGATORS Module Documentation

NAME: CONDIG
PURPOSE: CONVERTS SIGN OF SIGNED VALUE TO DIGIT
VAL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CONDIG
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

SSIGN = CHAR
SIGN = I*4
DIGIT = I*4
ERROR = I*4

CALLED DIRECTLY BY:

CRTBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: CRTATR
PURPOSE: POPULATE ATTRIBUTE DATA ITEMS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTATR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

TYPE = CHAR
ATTR = CHAR
RECNO = I*4
BCHAR = I*4
LCHAR = I*4
SIZE = I*4
NODEC = I*4
CDFLU = I*4
STATUS = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

ROUTINES CALLED:

WRTATT - WRITE ATTRIBUTE RECORD

**

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CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: CRTBUF
PURPOSE: CREATE CHAR. STRING FOR FIELD COMPARISON
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTBUF
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

BUFFER = CHAR
STPOS = I*4
FLDLN = I*4
NCOMP = I*4
SCOMP = R*4
ERROR = I*4
FLDBUF = CHAR
SIGN = I*4
FLDTYP = CHAR
FIELD = I*4
NODIG = I*4
MODCHK = CHAR

ROUTINES CALLED:

CONDIG - CONVERTS SIGN OF SIGNED VALUE TO DIGIT VAL **
NISINT - CONVERTS A STRING NUMBER TO AN INTERGER **
NISREL - CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**

CALLED DIRECTLY BY:

NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS **

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USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: CRTCDR
PURPOSE: CREATE THE RELATIVE ACCESS FILE FOR REL.
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RELFIL = CHAR
ENTITY = CHAR
CDFLU = I*4
RELLU = I*4
ATRLTH = I*4
RECNO = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR\$CLOSE
FOR\$OPEN
UPDHDR - UPDATE HEADER RECORD
WRTCDR - WRITE CURRENT RECORD

..
..

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CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: CRTHDR
PURPOSE: CREATE A RELATIVE ADDRESS FILE (CDF)
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: CRTHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

FILNME = CHAR
ENTITY = CHAR
RECLTH = I*4
ATRLTH = I*4
NOATTR = I*4
CDFLU = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR\$OPEN
WRTHDR - WRITE RECORD HEADER

**

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CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: FORCLS
PURPOSE: CLOSE ALL FILES USED BY THE AGGREGATORS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: FORCLS
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU1 = I*4
CDFLU2 = I*4
CDFLU3 = I*4
STATUS = I*4

ROUTINES CALLED:

FOR\$CLOSE

CALLED DIRECTLY BY:

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: GACHK
PURPOSE: CHECK INPUT PARAMETERS OF 'GETATT' CALL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GACHK
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY - I*4
CDFLU - I*4
ATT1 - I*4
LASATT - I*4
ATTR - I*4
RC - I*4
CHADRS - CHAR

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

ROUTINES CALLED:

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**

CALLED DIRECTLY BY:

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GETATT - RETRIEVE ATTRIBUTE INFORMATION **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: GAINFO
PURPOSE: STORE ATTRIBUTE INFORMATION IN COMMON
BLOCK
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GAINFO
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ATT1 = I*4
LASATT = I*4
CDFLU = I*4
ATTR = CHAR
RC = I*4
RECADR = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

CALLED DIRECTLY BY:

ANAATT	- DETERMINE LEGALITY OF ATTRIBUTE NAME	**
ANAVAL	- CONVERT VALUE OF ATTRIBUTE TYPE	**
GACHK	- CHECK INPUT PARAMETERS OF 'GETATT' CALL	**
PACHK	- CHECK THE PARAMETERS OF THE PUTATT CALL	**

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SACHK - SORTING THE ATTRIBUTE RECORDS **

USED IN MAIN PROGRAM(S):

ANAATT - DETERMINE LEGALITY OF ATTRIBUTE NAME **
ANAVAL - CONVERT VALUE OF ATTRIBUTE TYPE **
CDJO1 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: GET
PURPOSE: RETRIEVE CONTENTS OF ENTITY CLASS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GET
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
POSPAR = CHAR
CDFLU = I*4
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

CHGPTR - ADJUST COMMON DATA RECORD POINTER **
FOR\$INQUIRE
GETCHK - CHECK INPUT PARAMETERS OF 'GET' FOR ERRORS **
GETPTR - DETERMINE NEXT CURRENT RECORD POINTER **
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD **
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **

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WRTHDR - WRITE RECORD HEADER

**

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION
GETREL - RETRIEVE THE NEXT RECORD FROM THE CDF FILE **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: GETATT
PURPOSE: RETRIEVE ATTRIBUTE INFORMATION
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
BUFFER = CHAR
CHADR = CHAR
IADRES = I*4
RADRES = I*4
TYPE = CHAR
SIZE = I*4
DECMAL = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD
IATT
CATT

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ROUTINES CALLED:

FOR\$INQUIRE

GACHK - CHECK INPUT PARAMETERS OF 'GETATT' CALL **
GETITM - EXTRACT ATTRIBUTE VALUE FROM USER'S BUFFER **
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **

CALLED DIRECTLY BY:

GETFLD - RETRIEVE AN ATTRIBUTE FROM A RECORD **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

AD-A182 015

INTEGRATED INFORMATION SUPPORT SYSTEM (IIS) VOLUME 5

2/3

COMMON DATA MODEL 5 (U) GENERAL ELECTRIC CO

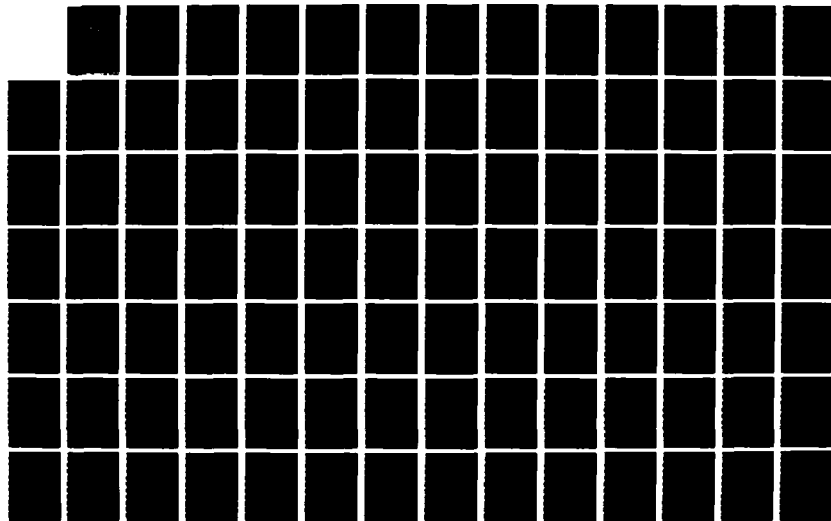
SCHENECTADY NY PRODUCTION RESOURCES CONSU

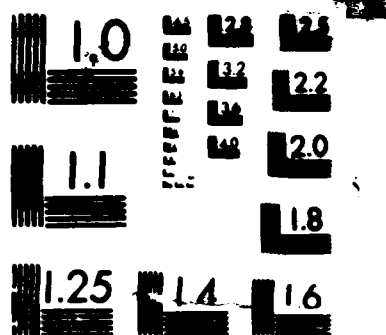
UNCLASSIFIED

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MICROCOPY RESOLUTION TEST CHART

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DATA AGGREGATORS Module Documentation

NAME: GETCHK
PURPOSE: CHECK INPUT PARAMETERS OF 'GET' FOR
 ERRORS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETCHK
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
POSPAR = CHAR
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

LIB\$INDEX

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

**

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USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: GETFLD
PURPOSE: RETRIEVE AN ATTRIBUTE FROM A RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETFLD
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
BUFFER = CHAR
CADRES = CHAR
TYPE = CHAR
CDFLU = I*4
IADRES = I*4
RADRES = R*4
SIZE = I*4
NODEC = I*4
STATUS = I*4

ROUTINES CALLED:

GETATT - RETRIEVE ATTRIBUTE INFORMATION

**

CALLED DIRECTLY BY:

CDJO1 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

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1 November 1985

CDJ01 - AGGREGATOR JOIN FUNCTION

DATA AGGREGATORS Module Documentation

NAME: GETITM
PURPOSE: EXTRACT ATTRIBUTE VALUE FROM USER'S
BUFFER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETITM
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

BUFFER = CHAR
BC = I*4
LC = I*4
TYPE = CHAR
SIZE = I*4
DECDIG = I*4
CHADRS = CHAR
IADRS = I*4
RADRES = R*4
RC = I*4

ROUTINES CALLED:

CHREAL - CHARACTER TO REAL CONVERSIONS **
CHRINT - CHARACTER TO INTEGER CONVERSION **

CALLED DIRECTLY BY:

GETATT - RETRIEVE ATTRIBUTE INFORMATION **

USED IN MAIN PROGRAM(S):

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1 November 1985

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: GETPTR
PURPOSE: DETERMINE NEXT CURRENT RECORD POINTER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETPTR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

REC1 = I*4
CURREC = I*4
NEXTREC = I*4
LASREC = I*4
POSPAR = CHAR
RC = I*4

ROUTINES CALLED:

LIB\$INDEX

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

**

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: GETREL
PURPOSE: RETRIEVE THE NEXT RECORD FROM THE CDF
FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: GETREL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
BUFFER = CHAR
CDFLU = I*4
STATUS = I*4

ROUTINES CALLED:

GET - RETRIEVE CONTENTS OF ENTITY CLASS

**

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: HOLCHR
PURPOSE: CONVERT DATA FROM HOLLERITH TO CHARACTER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: HOLCHR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

INTADD = I*4 (1)
STRING = CHAR
RC = I*4

INCLUDE FILES:

MACHDEP.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

BNFMDP

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DATA AGGREGATORS Module Documentation

NAME: INTCHR
PURPOSE: CONVERT INTEGER VALUE TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: INTCHR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

INTGR = I*4
SIZE = I*4
STRING = CHAR
RC = I*4

CALLED DIRECTLY BY:

PUTITH - CONVERTS VAL SUPPLIED AND STORES IN BUFFER **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: INTSRT
PURPOSE: FILL KEY ARRAY USED BY THE VAX SORT
ROUTINE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: INTSRT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RC = I*4
KEYBUF = I*2 (41)
TOTKEY = I*2

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD
IATT
CATT

ROUTINES CALLED:

SOR\$INIT_SORT
WRTATT - WRITE ATTRIBUTE RECORD

**

PS 620141320
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CALLED DIRECTLY BY:

SORT - SORTING A FILE

..

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISCLOS
PURPOSE: THIS PROCESS CLOSES THE NIS FILES
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISCLOS
SOURCE 1: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

FILNAM = CHAR
UNITNO = I*4
FILSTS = CHAR
CLSERR = I*4

ROUTINES CALLED:

FOR\$CLOSE

CALLED DIRECTLY BY:

CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISCMD
PURPOSE: CONTROL THE COMPARISON OF THE NIS FIELDS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISCMD
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

F1BUF = CHAR
F2BUF = CHAR
NISCON = I*4
POS1 = I*4
LG1 = I*4
TYPE1 = CHAR
NODIG1 = I*4
ATTR1 = I*4
POS2 = I*4
LG2 = I*4
TYPE2 = CHAR
NODIG2 = I*4
ATTR2 = I*4
F1ERR = I*4
F2ERR = I*4
INDEX = I*4
CHECK = CHAR

ROUTINES CALLED:

CRTBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **
NISINT - CONVERTS A STRING NUMBER TO AN INTERGER **
NISREL - CONVERTS CHAR STRING TO REAL VAL W/NO DIGIT**

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CALLED DIRECTLY BY:

CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISINT
PURPOSE: CONVERTS A STRING NUMBER TO AN INTERGER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISINT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
INTGR = I*4
RC = I*4
ILEN = I*4

CALLED DIRECTLY BY:

CRTBUF	- CREATE CHAR. STRING FOR FIELD COMPARISON	**
NISCMD	- CONTROL THE COMPARISON OF THE NIS FIELDS	**

USED IN MAIN PROGRAM(S):

CDN01	- AGGREGATOR NOT IN SET FUNCTION
-------	----------------------------------

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISOPEN
PURPOSE: OPENS THE INPUT AND OUTPUT NIS FILES
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISOPEN
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

FILNAM = CHAR
UNITNO = I*4
FILSTS = CHAR
RECLN = I*4
OPERR = I*4

ROUTINES CALLED:

FOR\$OPEN

CALLED DIRECTLY BY:

CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISREAD
PURPOSE: READS THE NIS FILE AND CREATE CHAR
BUFFER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISREAD
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

BUFFER = CHAR
UNITNO = I*4
RDERR = I*4
RECSIZE = I*4
FILEOF = I*4

CALLED DIRECTLY BY:

CDN01 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISREL
PURPOSE: CONVERTS CHAR STRING TO REAL VAL W/NO
DIGIT
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISREL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

STRING = CHAR
REALVA = R*4
ILEN = I*4
NODIG = I*4
RC = I*4

CALLED DIRECTLY BY:

CRTBUF - CREATE CHAR. STRING FOR FIELD COMPARISON **
NISCMD - CONTROL THE COMPARISON OF THE NIS FIELDS **

USED IN MAIN PROGRAM(S):

CDN01 - AGGREGATOR NOT IN SET FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISSORT
PURPOSE: NOT-IN-SET SORT ROUTINE
LANGUAGE: VAX-11 COBOL
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISSORT
SOURCE FILE TYPE: .COB
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

-
THE OBJECTIVE OF THIS CONFIGURATION ITEM IS TO
SORT THE INPUT FILE THAT MEETS THE QUALIFICATIONS
OF THE RECORD "INPUT-FILE".

REVISED 15 APR 1985
MODIFIED 2 MAY 1985
MODIFIED 9 MAY 1985

ARGUMENTS:

INPUT-FILE = RECRD
TEMP-FILE-NAME = DSPLY [X(30)]
MSG-DESC = DSPLY [X(60)]
RET-STATUS = DSPLY [X(5)]

INCLUDE FILES:

ERRCDM - IISS ERROR STATUS CODES FOR CDMP MODULES
ERRPRO - PROCESS ERROR INCLUDE FILE

ROUTINES CALLED:

SOR\$PASS_FILES
SOR\$INIT_SORT
SOR\$SORT_MERGE
SOR\$END_SORT

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ERRPRO

CALLED DIRECTLY BY:

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: NISWRIT
PURPOSE: TO WRITE THE NIS BUFFER TO RESULTS FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: NISWRIT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

UNITNO = I*4
BUFFER = CHAR
WRERR = I*4
RECSIZ = I*4

CALLED DIRECTLY BY:

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

USED IN MAIN PROGRAM(S):

CDNO1 - AGGREGATOR NOT IN SET FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: PACHK
PURPOSE: CHECK THE PARAMETERS OF THE PUTATT CALL
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PACHK
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
ATT1 = I*4
LASATT = I*4
ATTR = CHAR
RC = I*4
CHADR = CHAR

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

ROUTINES CALLED:

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**

CALLED DIRECTLY BY:

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PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: PUTATT
PURPOSE: DB AP USED TO INIT/CHANGE AN ATT VALUE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PUTATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
CHADR = CHAR
IADRES = I*4
RADRES = R*4
BUFFER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD
IATT
CATT

ROUTINES CALLED:

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CHKRNG	-	PERFORM ATTRIBUTE VALUE RANGE CHECKS	**
FOR\$INQUIRE			
PACHK	-	CHECK THE PARAMETERS OF THE PUTATT CALL	**
PUTITM	-	CONVERTS VAL SUPPLIED AND STORES IN BUFFER	**
RDHDR	-	READ HEADER RECORD TO DETERMINE PROCESSING	**

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: PUTITM
PURPOSE: CONVERTS VAL SUPPLIED AND STORES IN
BUFFER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: PUTITM
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CHADRS = CHAR
IADRS = I*4
RADRS = R*4
BC = I*4
LC = I*4
TYPE = CHAR
SIZE = I*4
DECDIG = I*4
BUFFER = CHAR
RC = I*4

ROUTINES CALLED:

INTCHR - CONVERT INTEGER VALUE TO CHARACTER STRING **
REALCH - CONVERT REAL NUMBER TO CHARACTER STRING **

CALLED DIRECTLY BY:

PUTATT - DB AP USED TO INIT/CHANGE AN ATT VALUE **

USED IN MAIN PROGRAM(S):

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CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: RDCDFR
PURPOSE: **** PURPOSE NOT FOUND BY STRIPPER ****
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDCDFR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RESNME = CHAR
ENTITY = CHAR
CDFLU = I*4
RELU = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR\$CLOSE
FOR\$OPEN
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
WRTREL - WRITE A RECORD TO THE RESULT FILE **

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: RDCDR
PURPOSE: RETURN THE CONTENTS OF A COMMON DATA
RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
NEXTREC = I*4
RECSIZ = I*4
BUFFER = CHAR
UPDFLG = CHAR
DELFLG = L*4

CALLED DIRECTLY BY:

GET - RETRIEVE CONTENTS OF ENTITY CLASS **
RDCDFR - **** PURPOSE NOT FOUND BY STRIPPER ****
RDRSFL - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**
SRTCDR - SORTING THE COMMON DATA RECORD **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
RDCDFR - **** PURPOSE NOT FOUND BY STRIPPER ****

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: RDHDR
PURPOSE: READ HEADER RECORD TO DETERMINE
PROCESSING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
ENTITY = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

CALLED DIRECTLY BY:

GET	- RETRIEVE CONTENTS OF ENTITY CLASS	**
GETATT	- RETRIEVE ATTRIBUTE INFORMATION	**
PUTATT	- DB AP USED TO INIT/CHANGE AN ATT VALUE	**
RDCDFR	- **** PURPOSE NOT FOUND BY STRIPPER ****	
RDRSFL	- WRITE THE RELATIVE FILE TO JOIN RESULT FILE**	**
SORT	- SORTING A FILE	**
SRTATT	- STORE THE SORTING CRITERIA FOR A SINGLE	

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ATTRIBUTE
UPDHDR - UPDATE HEADER RECORD

**

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
RDCDFR - **** PURPOSE NOT FOUND BY STRIPPER ****

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DATA AGGREGATORS Module Documentation

NAME: RDRSFL
PURPOSE: WRITE THE RELATIVE FILE TO JOIN RESULT
FILE
LANGUAGE: VAX-11. FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RDRSFL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RESNME = CHAR
ENTITY = CHAR
CDFLU = I*4
RELLU = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR\$CLOSE
FOR\$OPEN
RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **

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WRTREL - WRITE A RECORD TO THE RESULT FILE **

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: REALCH
PURPOSE: CONVERT REAL NUMBER TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: REALCH
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

REALNO = R*4
TOTDIG = I*4
DECDIG = I*4
STRING = CHAR
RC = I*4

CALLED DIRECTLY BY:

PUTITM - CONVERTS VAL SUPPLIED AND STORES IN BUFFER **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: RELFTN
PURPOSE: CONVERT REAL NUMBER TO CHARACTER STRING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RELFTN
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

DECMAL = I*4
REALIN = R*8
CHAROT = CHAR

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: RETCDR
PURPOSE: SORTING AND WRITE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: RETCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RECREL = I*4
TOTKEY = I*2
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

SOR\$RETURN_REC
WRTCDR - WRITE CURRENT RECORD

**

CALLED DIRECTLY BY:

SORT - SORTING A FILE

**

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1 November 1985

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: SACHK
PURPOSE: SORTING THE ATTRIBUTE RECORDS
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SACHK
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
ORDER = CHAR
RC = I*4
RECADR = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****
ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD
IATT
CATT

ROUTINES CALLED:

GAINFO - STORE ATTRIBUTE INFORMATION IN COMMON BLOCK**
WRTATT - WRITE ATTRIBUTE RECORD **

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CALLED DIRECTLY BY:

SRTATT - STORE THE SORTING CRITERIA FOR A SINGLE
 ATTRIBUTE

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: SORT
PURPOSE: SORTING A FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SORT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

FOR\$INQUIRE
INTSRT - FILL KEY ARRAY USED BY THE VAX SORT ROUTINE**
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
RETCDR - SORTING AND WRITE RECORD **
SRTCDR - SORTING THE COMMON DATA RECORD **
TRMSRT - TERMINATE THE SORTING **

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CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: SRTATT
PURPOSE: STORE THE SORTING CRITERIA FOR A SINGLE
ATTRIBUTE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SRTATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
ATTR = CHAR
CDFLU = I*4
ORDER = CHAR
RC = I*4

INCLUDE FILES:

HDRINFO.IN - ***** PURPOSE NOT FOUND BY STRIPPER *****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

ADDCHN - ADD ATTRIBUTE TO LINKED LIST **
FOR\$INQUIRE
RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
SACHK - SORTING THE ATTRIBUTE RECORDS **

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1 November 1985

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: SRTCDR
PURPOSE: SORTING THE COMMON DATA RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: SRTCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
KEYBUF = I*2 (41)
TOTKEY = I*2
REC1 = I*4
LASREC = I*4
NUMREC = I*4
RECSIZ = I*4
RECREL = I*4
RC = I*4

ROUTINES CALLED:

RDCDR - RETURN THE CONTENTS OF A COMMON DATA RECORD**
SOR\$RELEASE_REC
SOR\$SORT_MERGE

CALLED DIRECTLY BY:

SORT - SORTING A FILE

**

USED IN MAIN PROGRAM(S):

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CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: TRMSRT
PURPOSE: TERMINATE THE SORTING
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: TRMSRT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RC = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

SOR\$END_SORT
WRTHDR - WRITE RECORD HEADER

**

CALLED DIRECTLY BY:

SORT - SORTING A FILE

**

PS 620141320
1 November 1985

USED IN MAIN PROGRAM(S):

CDJO1 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: UPDHDR
PURPOSE: UPDATE HEADER RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: UPDHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

ENTITY = CHAR
CDFLU = I*4
RECNO = I*4
RECCNT = I*4
STATUS = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

ROUTINES CALLED:

RDHDR - READ HEADER RECORD TO DETERMINE PROCESSING **
WRTHDR - WRITE RECORD HEADER **

CALLED DIRECTLY BY:

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1 November 1985

CDJ01 - AGGREGATOR JOIN FUNCTION
CRTCDR - CREATE THE RELATIVE ACCESS FILE FOR REL. **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

PS 620141320
1 November 1985

DATA AGGREGATORS Module Documentation

NAME: WRTATT
PURPOSE: WRITE ATTRIBUTE RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTATT
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
RECADR = I*4

INCLUDE FILES:

ATTRINF.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IATT
CATT

CALLED DIRECTLY BY:

ADDCHN	- ADD ATTRIBUTE TO LINKED LIST	**
CRTATR	- POPULATE ATTRIBUTE DATA ITEMS	**
INTSRT	- FILL KEY ARRAY USED BY THE VAX SORT ROUTINE	**
SACHK	- SORTING THE ATTRIBUTE RECORDS	**

USED IN MAIN PROGRAM(S):

CDJQ1 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: WRTCDR
PURPOSE: WRITE CURRENT RECORD
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTCDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4
CURREC = I*4
RECSIZ = I*4
BUFF = CHAR
UPDFLG = CHAR

CALLED DIRECTLY BY:

CDJ01 - AGGREGATOR JOIN FUNCTION
CRTCDR - CREATE THE RELATIVE ACCESS FILE FOR REL. **
RETCDR - SORTING AND WRITE RECORD **

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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1 November 1985

DATA AGGREGATORS Module Documentation

NAME: WRTHDR
PURPOSE: WRITE RECORD HEADER
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTHDR
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

CDFLU = I*4

INCLUDE FILES:

HDRINFO.IN - **** PURPOSE NOT FOUND BY STRIPPER ****

COMMON BLOCKS:

IHD
CHD

CALLED DIRECTLY BY:

ADDCHN	- ADD ATTRIBUTE TO LINKED LIST	**
CRTHDR	- CREATE A RELATIVE ADDRESS FILE (CDF)	**
GET	- RETRIEVE CONTENTS OF ENTITY CLASS	**
TRMSRT	- TERMINATE THE SORTING	**
UPDHDR	- UPDATE HEADER RECORD	**

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION

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DATA AGGREGATORS Module Documentation

NAME: WRTREL
PURPOSE: WRITE A RECORD TO THE RESULT FILE
LANGUAGE: VAX-11 FORTRAN
MODULE TYPE: SUBROUTINE
SOURCE FILE: WRTREL
SOURCE FILE TYPE: .FOR
HOST:
SUBSYSTEM: CDM
SUBDIRECTORY:
DOCUMENTATION GROUP: PS41320

DESCRIPTION:

ARGUMENTS:

RELU = I*4
BUFFER = CHAR
RECSIZ = I*4
RC = I*4

CALLED DIRECTLY BY:

RDCDFR - ***** PURPOSE NOT FOUND BY STRIPPER *****
RDRSFL - WRITE THE RELATIVE FILE TO JOIN RESULT FILE**

USED IN MAIN PROGRAM(S):

CDJ01 - AGGREGATOR JOIN FUNCTION
RDCDFR - ***** PURPOSE NOT FOUND BY STRIPPER *****

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1 November 1985

3.10.9 Include File Descriptions

The following list contains a purpose and description of each include file listed in 3.10.4 as specified in the source code. The language it is written in is also given.

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DATA AGGREGATORS Include File Description

FILE NAME: AGGMSG
PURPOSE: AGGREGATOR INPUT MESSAGE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS THE FORMAT OF THE INPUT MESSAGE FOR THE
CDMP AGGREGATORS

DESCRIPTION :-

AGGREGATOR INPUT MESSAGE FORMAT

NIS - NOT IN SET

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DATA AGGREGATORS Include File Description

FILE NAME: APL
PURPOSE: JOIN QUERY ATTRIBUTE PAIR LIST
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

**CONTAINS INFORMATION ABOUT THE JOIN
ATTRIBUTES FOR NDML SUBTRANSACTIONS**

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DATA AGGREGATORS Include File Description

FILE NAME: CHKCDM
PURPOSE: IISS CDMP CHECK STATUS CODES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS ALL STATUS CODES FOR THE
CDMP MODULES

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DATA AGGREGATORS Include File Description

FILE NAME: ERRCDM
PURPOSE: IISS ERROR STATUS CODES FOR CDMF MODULES
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS ALL ERROR CODES USED BY CDMF *
MODULES FOR ERROR HANDLING *

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DATA AGGREGATORS Include File Description

FILE NAME: ERRPRO
PURPOSE: PROCESS ERROR INCLUDE FILE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

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DATA AGGREGATORS Include File Description

FILE NAME: JQGTBL

**PURPOSE: JOIN QUERY GRAPH TELLS HOW TO CONNECT
SUBTRANSACTIONS**

LANGUAGE: VAX-11 COBOL

DESCRIPTION:

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DATA AGGREGATORS Include File Description

FILE NAME: RFTAB2
PURPOSE: THE RESULT FIELD TABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS CONCEPTUAL SCHEMA INFORMATION ABOUT
THE RESULTS OF AN NDML REQUEST

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DATA AGGREGATORS Include File Description

FILE NAME: RFTABLE
PURPOSE: THE RESULT FIELD TABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

CONTAINS CONCEPTUAL SCHEMA INFORMATION ABOUT
THE RESULTS OF AN NDML REQUEST

THE RESULT FIELD TABLE

WHEN CHANGING THE STRUCTURE OF THIS TABLE
BE SURE TO CHANGE THE LAYOUT IN THE
LINKAGE SECTION OF THE DRS (CDS01)
WHICH WAS COPIED FROM THIS.

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DATA AGGREGATORS Include File Description

FILE NAME: SRVRET
PURPOSE: AS THE RETURN GIVEN A TABLE-FULL ERROR
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

MODIFIED 11/2/83 TO INCLUDE RET-CODE-5 *
MODIFIED 1/9/84 TO INCREASE ALL ERROR CODES TO PIC X(5) *
AND TO ELIMINATE ALPHA'S *
MODIFIED 1/26/84 TO ADD RET-CODE FOR GETUSR-NOT-SUCC *
SRV-SUCCESSFUL ADDED FOR GENERIC RETURN *
MODIFIED 2/7/84 TO ADD ERROR CODES FOR ENTRY-NOT-FOUND *
MODIFIED 2/8/84 TO ADD WTHST-NOT-SUCCESSFUL *
MODIFIED 2/20/84 TO ADD TSTMOD NEW CODES. *
MODIFIED 20 AUG 84 INITIALIZE ALL LOCAL VARIABLES TO
SPACES OR 0.
MODIFIED 5/21/85 TO ADD RCL AND FILGEN RETURN CODES

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DATA AGGREGATORS Include File Description

FILE NAME: STDRESP
PURPOSE: WS DEFINITION FOR STANDARD STATUS VARIABLE
LANGUAGE: VAX-11 COBOL

DESCRIPTION:

THE STANDARD 'PROCESS COMPLETE' MESSAGE

3.10.10 Hierarchy Chart

The following hierarchy charts show the relationships between all of the modules mentioned in the above documentation. A module may call a subroutine several times within its code, but the call will only be shown once as a single relationship on this hierarchy chart. All modules shown at the top of the first page are considered Main Programs as described in section 3.10.1 above.

There is an internal paging scheme as marked by the numbers in the upper right corner of each page. An index after the last page of the chart shows where a routine and its calls are first defined. If a routine has no page reference, it either makes no calls or is an external routine. A continuation box on the end of a tree limb shows where that the tree continues on the page numbered mentioned. A number in a box with a routine name points to the page where the routine is further defined within the hierarchy tree. If there is no number in a box, the routine either makes no calls or is an external routine.

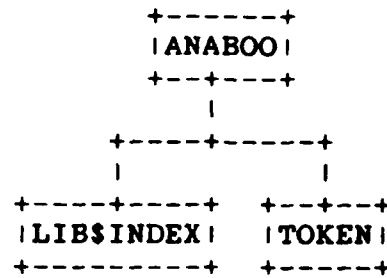
PS 620141320
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1

+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
ANAATT	ANABOO	ANAREL	ANAVAl	CDJO1	(CONT)
+-----+	+-----2+	+-----+	+-----3+	+-----4+	+-----5+
+-----+		+-----+			
+-----+	+-----+	+-----+	+-----+		
GAINFO	TOKEN	LIB\$INDEX	TOKEN		
+-----+	+-----+	+-----+	+-----+		

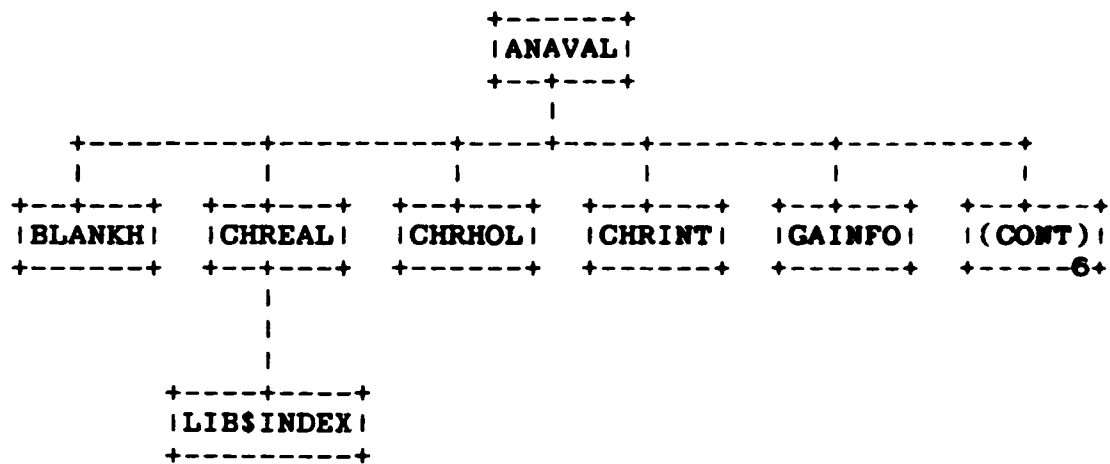
PS 620141320
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2



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3



4

3 152

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1 November 1985

5

+(-----+ (CONT) +-----1+	+(-----+ CDN01 +-----8+	+(-----+ CDU01 +-----9+	+(-----+ CONCAT +-----+ +-----+ ACTLEN +-----+	+(-----+ RDCDFR +-----10+
------------------------------------	-----------------------------------	-----------------------------------	--	-------------------------------------

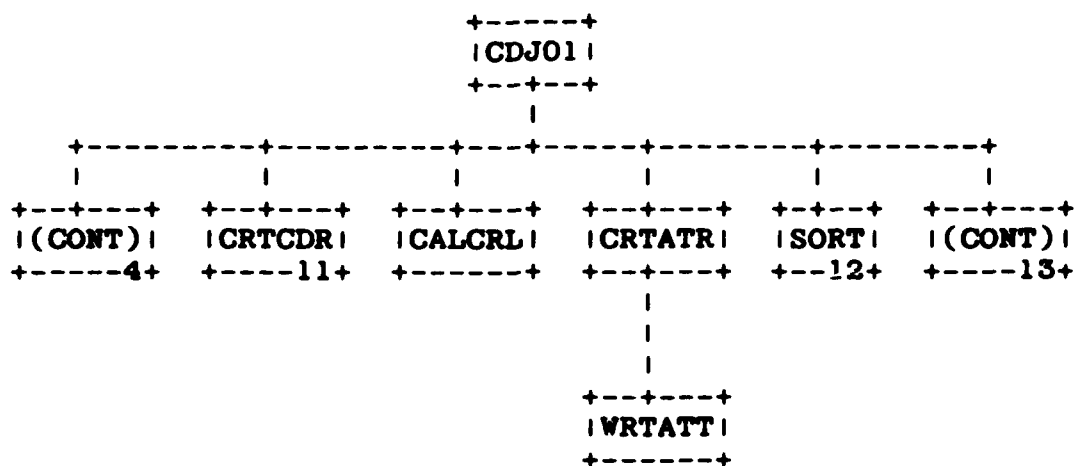
PS 620141320
1 November 1985

6

```
      +-----+  
      | ANAVAL |  
      +-----+  
      |  
+-----+-----+-----+  
|         |         |         |  
+-----+ +-----+ +-----+ +-----+  
| (CONT) | | LIB$INDEX | | RMATR | | TOKEN |  
+-----+ +-----+ +-----+ +-----+  
| -3 |
```

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7



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8

+-----+
|CDNO1|
+-----+
|

+-----+					
+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
INITAL	RCV	SIGERR	WTHST	GENFIL	(CONT)
+-----+	+-----+	+-----+	+-----+	+-----+	+-----14+

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9

+-----+
|CDU01|
+-----+

|

+-----+					
+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
INITAL	RCV	SIGERR	WTHST	GENFIL	(CONT)
+-----+	+-----+	+-----+	+-----+	+-----+	+-----15+

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10

```
      +-----+  
      |RDCDFR|  
      +-----+  
      |  
+-----+-----+-----+-----+  
|         |         |         |         |  
+-----+-----+-----+-----+  
|FOR$CLOSE| |FOR$OPEN| |RDCDR| |RDHDR| |WRTREL|  
+-----+-----+-----+-----+  
|         |         |         |         |
```


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1 November 1985

11

```
      +-----+
      | CRTCDR |
      +-----+
        |
+-----+-----+-----+-----+
|         |         |         |         |
+-----+-----+-----+-----+
| FOR$CLOSE | FOR$OPEN | UPDHDR | WRTCDR |
+-----+-----+-----+-----+
|         |         |    -23  |         |
+-----+-----+-----+-----+
```

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12

```

      +---+
      | SORT |
      +---+
        |
    +-----+
    |         |         |         |         |         |
+---+ +---+ +---+ +---+ +---+ +---+
| FOR$INQUIRE | | INTSRT | | RDHDR | | RETCDR | | SRTC DR | | TRMSRT |
+---+ +---+ +---+ +---+ +---+ +---+
+---16+ +---17+ +---18+ +---19+

```

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1 November 1985

13

```
      +-----+  
      |CDJ01|  
      +-----+  
      |  
+-----+-----+-----+-----+-----+  
|          |          |          |          |          |  
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+ +---+---+  
|(CONT)| |SRTATT| |GETREL| |GET| |GETFLD| |(CONT)|  
+-----7+ +-----20+ +-----+ +---21+ +-----22+ +-----23+  
|  
|  
+---+---+  
|GET|  
+---21+
```

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1 November 1985

14

```

+-----+
|CDNO1|
+-----+
|
+-----+-----+-----+-----+
|               |               |               |               |
+-----+-----+-----+-----+-----+
| (CONT) | |NISSORT| |NISOPEN| |NISCMD| | (CONT) |
+-----8+ +-----24+ +-----+ +-----25+ +-----26+
|               |
+-----+-----+
|FOR$OPEN|
+-----+

```

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15

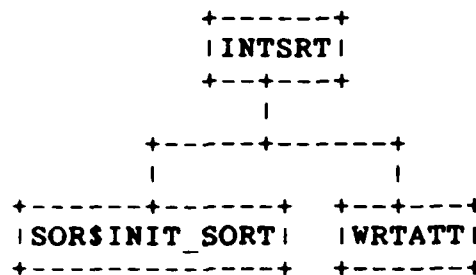
+-----+
|CDU01|
+-----+

|

+-----+			
+-----+	+-----+	+-----+	+-----+
(CONT)	SOR\$PASS_FILES	SOR\$INIT_SORT	(CONT)
+-----9+	+-----+	+-----+	+-----27+

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16



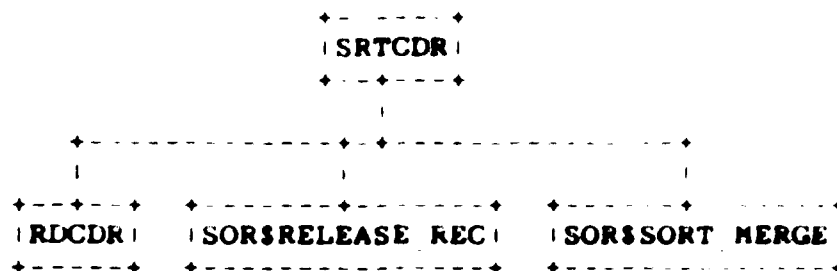
PS 620141320
1 November 1985

17

```
      +-----+  
      |RETCDR|  
      +-----+  
      |  
      +-----+  
      |           |  
+-----+-----+ +-----+  
|SOR$RETURN_REC| |WRTCDR|  
+-----+-----+ +-----+
```

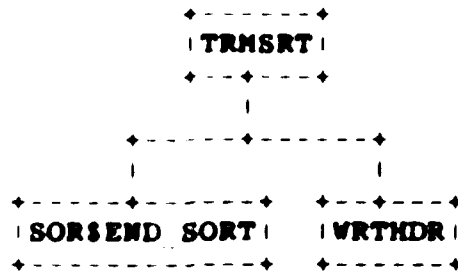
PS 620141320
1 November 1985

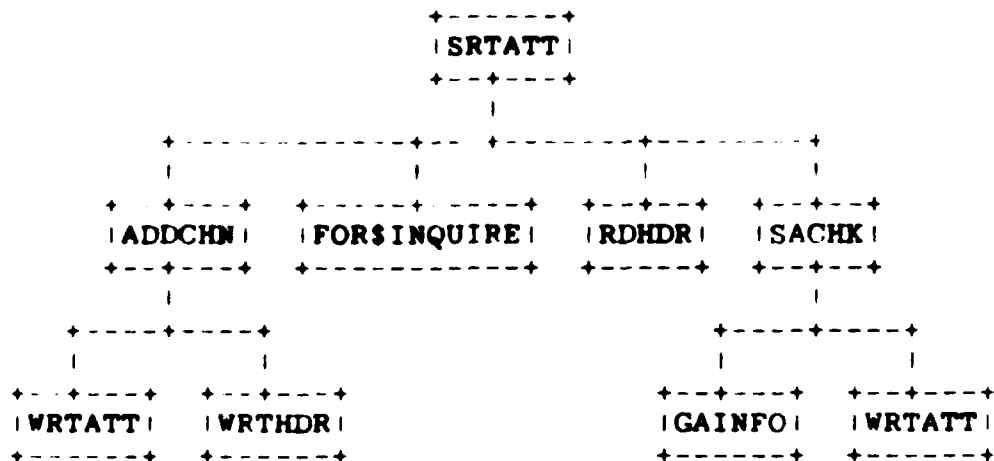
18

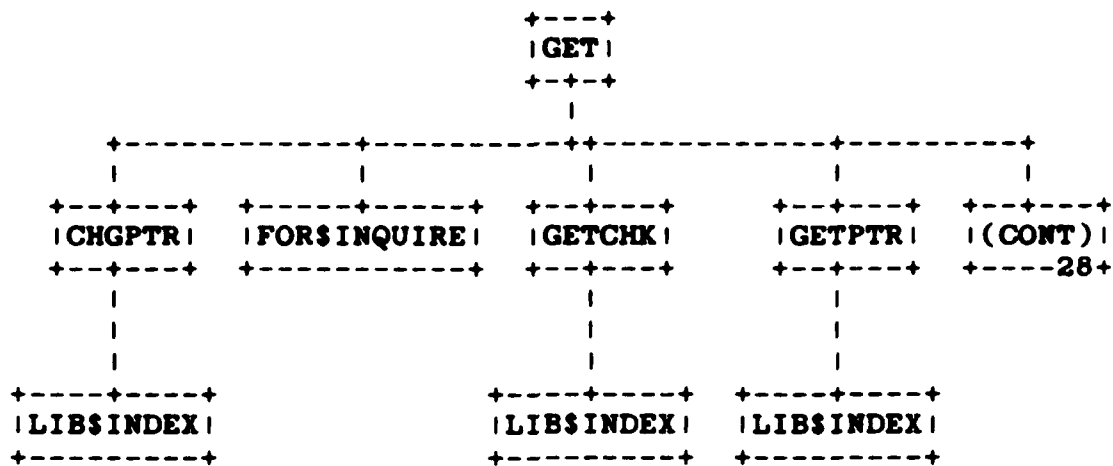


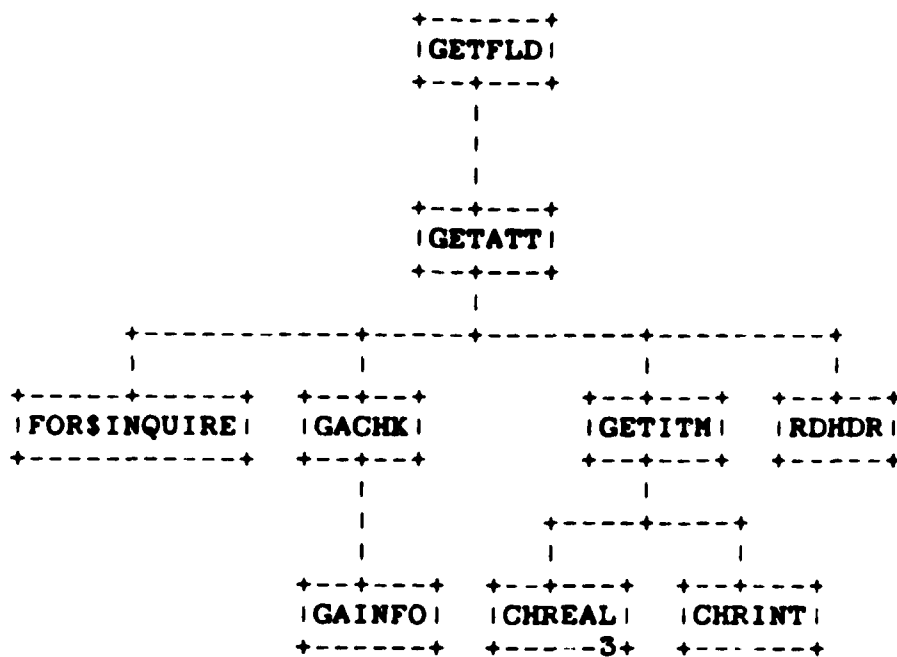
PS 620141320
1 November 1985

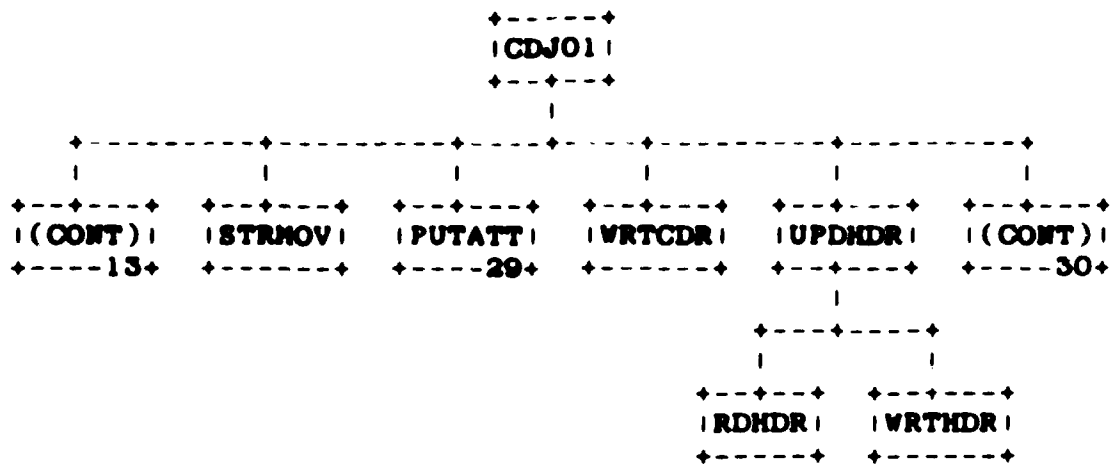
19











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24

NISSORT

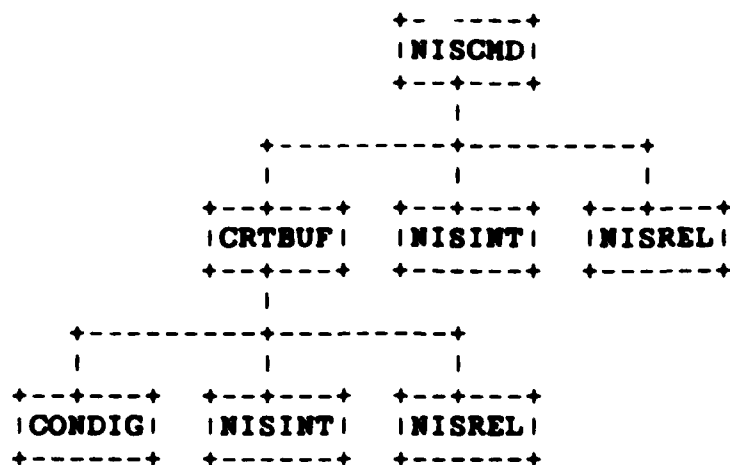
| | | |

|SOR\$PASS_FILES| |SOR\$INIT_SORT| |SOR\$SORT_MERGE| |(CONT)|

| | | |31|

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25



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26

```

+-----+
|CDNO1|
+---+---+
      |
+-----+-----+-----+-----+-----+
|         |         |         |         |
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+
|(CONT)| |NISREAD| |NISWRIT| |NISCLOS| |(CONT)|
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+
|14|     |       | |       | |       | |32|
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+
                        |
                        |
                        +---+---+---+
                        |FOR$CLOSE|
                        +---+---+---+

```


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27

```
      +-----+  
      |CDU01|  
      +-----+  
      |  
+-----+-----+-----+-----+  
|          |          |          |          |  
+-----+-----+-----+-----+  
|(CONT)|  |SOR$SORT_MERGE|  |SOR$END_SORT|  |(CONT)|  
+-----15+  +-----+-----+-----+-----+  +-----33+
```

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28

♦---♦
|GET|
♦---♦

♦---♦---♦---♦---♦
|
♦---♦---♦---♦---♦
| (CONT) | |RDCDR| |RDHDR| |WRTHDR|
♦---21♦ |
♦---♦---♦---♦---♦

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20

PUTATE

CHKREQ
34

FOR INQUIRE

PACKE

PUTITH

RIMIN

GAINFO

INTCH

REALCH

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30

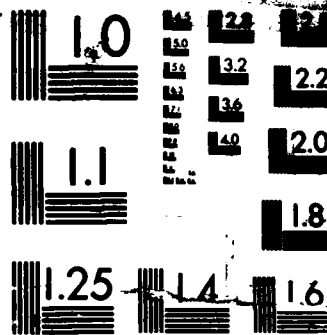
```
      +-----+
      |CDJ01|
      +-----+
      |
+-----+-----+-----+-----+-----+
|         |         |         |         |         |
+-----+-----+-----+-----+-----+
| (CONT) | |RDRSFL| |FORCLS| |NSEND| |DELFIL| | (CONT) |
+-----+-----+-----+-----+-----+
|  ---23+ | |  ---35+ | |  ---+ | |  ---+ | |  ---36+ |
+-----+-----+-----+-----+-----+
      |
      |
      +-----+-----+
      |FOR$CLOSE|
      +-----+-----+
```

AD-A182 015 INTEGRATED INFORMATION SUPPORT SYSTEM (IISS) VOLUME 5 3/3

COMMON DATA MODEL 5 (U) GENERAL ELECTRIC CO
SCHENECTADY NY PRODUCTION RESOURCES CONSU

UNCLASSIFIED J L ALTHOFF ET AL 01 NOV 85 PS-620141320 F/G 12/5 NL

END
8:81
DTIC



MICROCOPY RESOLUTION TEST CHART

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31

```
      +-----+  
      |NISSORT|  
      +-----+  
      |  
+-----+  
|         |         |  
+---+---+ +---+---+ +---+---+  
|(CONT)| |SOR$END_SORT| |ERRPRO|  
+---24+ +---+---+ +---+---+
```

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32

```
      +-----+  
      |CDN01|  
      +---+---+  
      |  
+-----+  
|         |         |         |         |  
+---+---+ +---+---+ +---+---+ +---+---+ +---+---+  
|(CONT)| |NSEND| |DELFIL| |TRMNAT| |ERRPRO|  
+---26+ +---+---+ +---+---+ +---+---+ +---+---+
```


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33

```
      +-----+  
      |CDU01|  
      +---+---+  
      |  
+-----+-----+-----+-----+  
|          |          |          |          |  
+---+---+ +---+---+ +---+---+ +---+---+  
|(CONT)| |NSEND| |TRMNAT| |ERRPRO|  
+---27+ +---+---+ +---+---+ +---+---+
```

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34

```
      +-----+  
      |CHKRNG|  
      +-----+  
      |  
+-----+-----+-----+-----+  
|         |         |         |         |  
+---+---+ +---+---+ +---+---+ +---+---+  
|ACTLEN| |CHREAL| |CHRINT| |LIB$INDEX|  
+---+---+ +---+---+ +---+---+ +---+---+  
                        3
```

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35

```
      +-----+  
      |RDRSFL|  
      +-----+  
      |  
+-----+-----+-----+-----+  
|         |         |         |         |  
+-----+-----+-----+-----+  
|FOR$CLOSE| |FOR$OPEN| |RDCDR| |RDHDR| |WRTREL|  
+-----+-----+-----+-----+  
|         |         |         |         |
```

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36

```
      +-----+  
      |CDJO1|  
      +---+---+  
          |  
      +-----+-----+  
      |           |           |  
+---+---+ +---+---+ +---+---+  
|(CONT)| |TRMNAT| |ERRPRO|  
+---30+ +---+---+ +---+---+
```

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ACTLEN		NISREL	
ADDCHN.....	20	NISSORT.....	24
ANAATT.....	1	NISWRIT	
ANABOO.....	2	NSEND	
ANAREL.....	1	PACHK.....	29
ANAVAl.....	3	PUTATT.....	29
BLANKH		PUTITH.....	29
CALCRL		RCV	
CDJO1.....	4	RDCDFR.....	10
CDNO1.....	8	RDCDR	
CDOU1.....	9	RDHDR	
CHGPTR.....	21	RDRSFL.....	35
CHKRNG.....	34	REALCH	
CHREAL.....	3	RETCDR.....	17
CHRHOL		RMATR	
CHRINT		SACHK.....	20
CONCAT.....	5	SIGERR	
CONDIG		SOR\$END SORT	
CRTATR.....	7	SOR\$INIT SORT	
CRTBUF.....	25	SOR\$PASS FILES	
CRTCDR.....	11	SOR\$RELEASE REC	
CRTHDR.....	4	SOR\$RETURN REC	
DELFIL		SOR\$SORT MERGE	
ERRPRO		SORT.....	12
FOR\$CLOSE		SRTATT.....	20
FOR\$INQUIRE		SRTCDR.....	18
FOR\$OPEN		STRMOV	
FORCLS.....	30	TOKEN	
GACHK.....	22	TRMNAT	
GAINFO		TRMSRT.....	19
GENFIL		UPDHDR.....	23
GET.....	21	WTHST	
GETATT.....	22	WRTATT	
GETCHK.....	21	WRTCDR	
GETFLD.....	22	WRTHDR	
GETITH.....	22	WRTREL	
GETPTR.....	21		
GETREL.....	13		
INITAL			
INTCHR			
INTSRT.....	16		
LIB\$INDEX			
NISCLOS.....	26		
NISCMD.....	25		
NISINT			
NISOPEN.....	14		
NISREAD			

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3.11 Program Listings Comments

This information is contained in the Module Descriptions in section 3.10.

SECTION 4

QUALITY ASSURANCE PROVISIONS

4.1 Introduction and Definitions

"Testing" is a systematic process that may be preplanned and explicitly stated. Test techniques and procedures may be defined in advance, and a sequence of test steps may be specified. "Debugging" is the process of isolation and correction of the cause of an error.

"Antibugging" is defined as the philosophy of writing programs in such a way as to make bugs less likely to occur and when they do occur, to make them more noticeable to the programmer and the user. In other words, as much error checking as is practical and possible in each routine should be performed.

4.2 Computer Programming Test and Evaluation

The quality assurance provisions for test consists of the normal testing techniques that are accomplished during the construction process. They consist of design and code walk-throughs, unit testing, and integration testing. These tests are performed by the design team. Structured design, design walk-through and the incorporation of "antibugging" facilitate this testing by exposing and addressing problem areas before they become coded "bugs."

END

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DTIC